PASSENGER PROGRESS ANNUAL
NOVEMBER 18, 1944
Railway Age
Founded in 1856

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GIFT

Symbol of a Decade



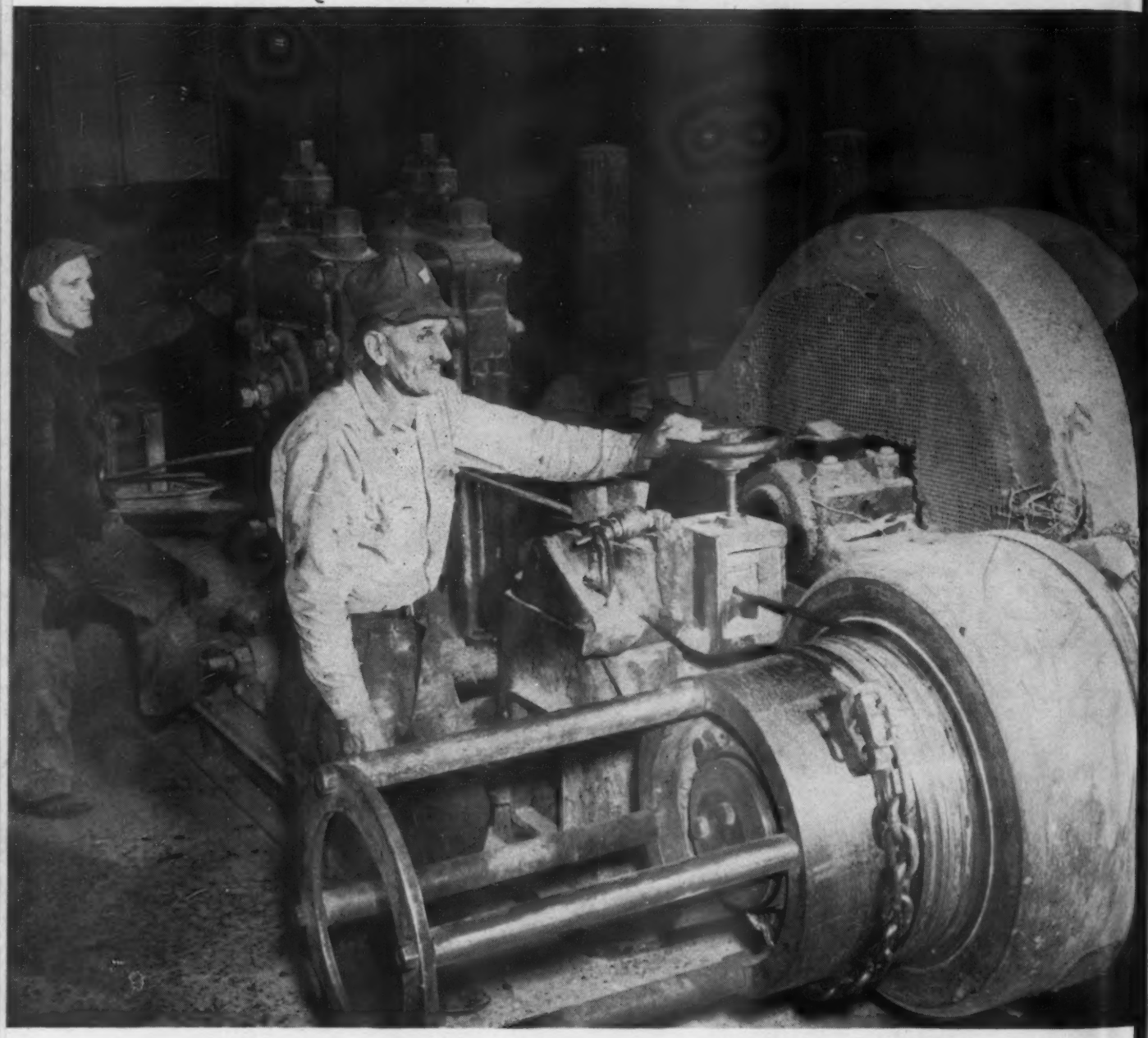
NO DECADE in the history of American railroads is packed with more evidence of passenger service progress than that just ended. Out of this decade the General Motors locomotive emerges as one of its most expressive symbols. For, here in one streamlined package is contained all of the chief elements of this progress: Faster, more reliable operation, greater passenger comfort, lower costs and the promise of still greater improvement as this new transportation tool is more widely applied.

★ ON TO FINAL VICTORY — GENERAL MOTORS LOCOMOTIVES — BUY MORE WAR BONDS ★

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS CORPORATION — LA GRANGE, ILLINOIS, U.S.A.

Reliance HY-CROME Spring Washers

In The Draft - Locomotive HY-CROME



"Tension There In Spite Of Wear"



• Cold drawn steel for HY-CROME Spring Washers is carefully controlled as to analysis, draft, annealing and design of section. Every step in its preparation for fabrication into HY-CROME Spring Washers is carefully supervised and planned. Control of raw material definitely contributes to the producing of a superior quality product.

• HY-CROME Spring Washers are made with various design of steel sections and each bolt size rightfully has the correct graduation in size, for specific applications, tested and produced to provide maximum in serviceability. HY-CROME has answered the war draft from steel to finished product. Send for descriptive Railway Motive Power Folder.

EATON MANUFACTURING COMPANY
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The Service Records tell the story

The best advertisement for Bethlehem passenger wheels is to be found, not on any printed page, but in the files of the nation's great railroads.

Service records . . . mileage reports maintained by the railroads themselves . . . are always the most convincing story of wheel performance. It is from actual records of this sort that Bethlehem wheels have gained their outstanding reputation.

Bethlehem's years of experience in making special purpose steels, plus its skill in the production of all types of specialized forgings, have been fully utilized in the manufacture of wrought steel railroad wheels.

Bethlehem was a pioneer in the heat treatment of this product. A special, unique process, supported by the most modern heat-treating and control equipment, accounts for the excellent performance that Bethlehem heat-treated wheels have given under severe service conditions.

In the face of today's abnormal demands, Bethlehem has consistently maintained the quality of its wheels and their running mates, forged steel axles. As in the past, they are built to meet, on a round-the-clock schedule, the highest standards of the railroad industry.



Published weekly by Simmons-Boardman Publishing Corporation, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription price $6.00 for one year U. S. and Canada. Single copies, 25 cents each. Vol. 117, No. 21.

Mt. Vernon Cars



MT. VERNON CAR DIVISION:
Complete Line of Freight Cars

LOCOMOTIVE DIVISION:
Diesel, Diesel-Electric, Electric, Steam, and Fireless Steam Locomotives.

PROCESS EQUIPMENT DIVISION:
Complete Line of Chemical, Food, and Petroleum Refinery Equipment.

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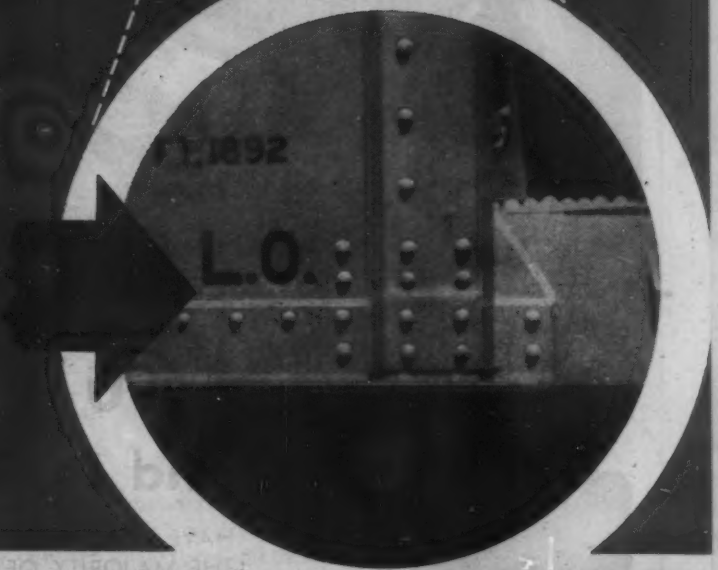
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RIVET HEAD





Drilling holes for rivets in a Mt. Vernon Car. Accurate placing of holes is a "must" at Mt. Vernon.



Bull riveter in operation on the underframe. Automatic riveting assures uniformly perfect heads.



Electric rivet heater assures uniform heating. Modern equipment is used throughout the Mt. Vernon plant.

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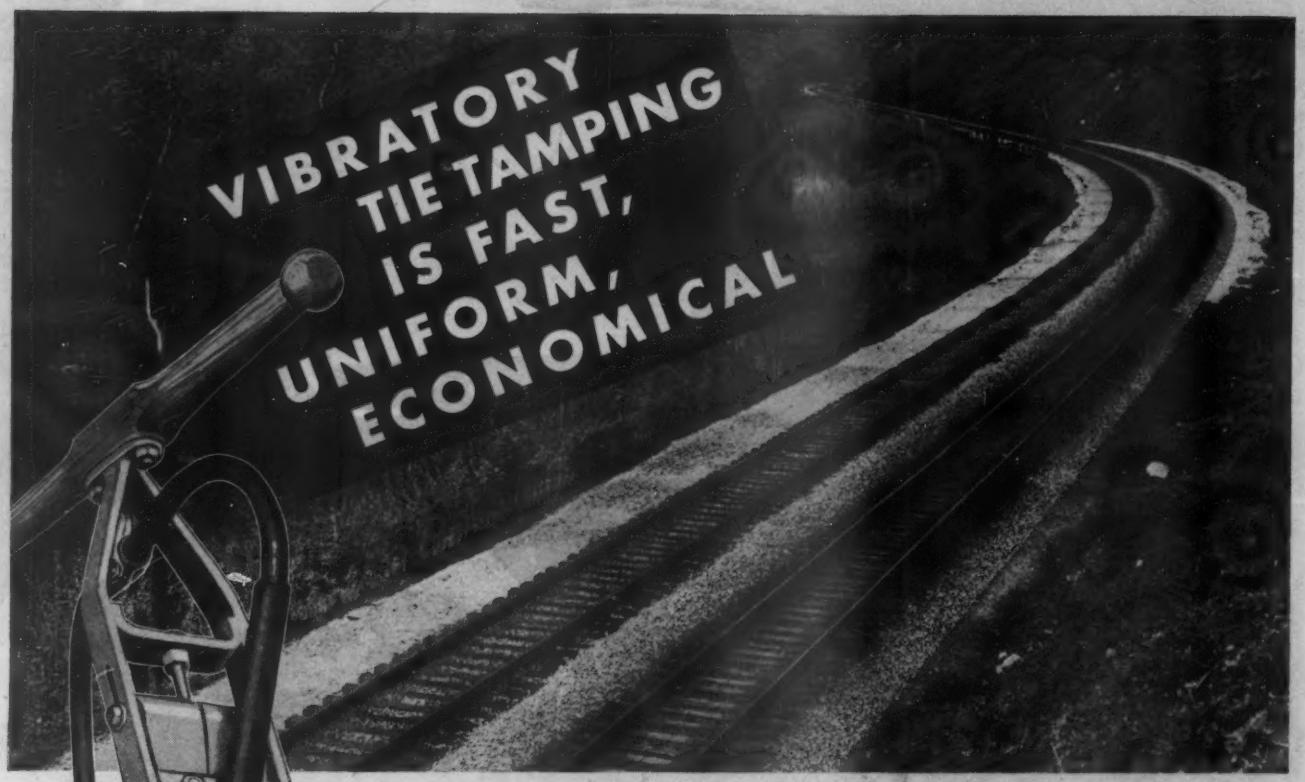
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PORTER
Better Built
Equipment
Established 1866



JACKSON *Tampers*
and PORTABLE POWER PLANTS

HAVE LONG BEEN STANDARD TRACK MAINTENANCE EQUIPMENT ON THE MAJORITY OF AMERICAN RAILROADS. Their superiority lies in the adaptation of vibration to ballast tamping, a principle originated by JACKSON.

Whatever the lift or nature of the ballast, ***vibratory*** tamping provides a closely-fitted, interlocking ballast pattern, with a minimum of voids between ballast particles. ***Vibratory*** tamping assures sound track and good drainage. . . . Fitting ballast, rather than crushing it, is the JACKSON ***vibratory*** tamping principle.

Procurement officials confronted with the task of preparing smooth riding, safe track for post-war high-speed passenger traffic, and heavy swift-moving freight, will find it to their advantage to investigate JACKSON ***vibratory*** tamping equipment and methods.

JACKSON Tampers with interchangeable blades, operated by a JACKSON Portable Power Plant, can be used with any sized gangs in all ballasts and lifts. Tamper illustrated with Step-Cut blade. Adapted to wide range of use.



ELECTRIC TAMPER & EQUIPMENT CO.

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CUT-OFF IN ALASKA

A lot of you railroaders served with Colonel Otto F. Ohlson when he was a telegrapher, a district superintendent on the Northern Pacific, or a Colonel on General Atterbury's staff in the First World War's Transportation Corps.

You've heard how, as general manager of The Alaska Railroad, he pulled it out of the red in 1938. But maybe you haven't heard how he pulled that road out of a hole in 1943.

The Alaska Railroad had two headaches—its salt water terminal at Seward, on Resurrection Bay, was much too close to the Japs. Its other port at Anchorage, on Cook Inlet, was handicapped by the fifth highest tide in the world. So, in 1940, Congress authorized a railroad cut-off of 12.34 miles from Portage on the Seward–Anchorage line, to Whittier, on comparatively safe Prince William Sound.

The Alaska Railroad, the U.S. War Department, U.S. Army Engineer Corps, and a private construction company completed that cut-off in 1943, after boring two long tunnels and making many big fills. The cut-off shortened rail distance between tidewater and interior Alaska by 51.8 miles. It also avoided 100 tough miles between Seward and Portage, got still farther away from the Japs, and terminated on what Major General Simon E. Buckner, Jr., of the Alaska Defense Command declared was "a harbor big enough to hold the whole Navy."

Joy over this new defense against Japan was cooled by the discovery that steam locomotives could not be used. One cut-off tunnel was 13,000 feet long, sixth longest tunnel in North America. The other tunnel was 4911 feet long. In these long bores, smoke from coal-burning steam locomotives menaced the lives of trainmen and passengers. To ventilate the longer tunnel would have cost $300,000.

The problem was solved when two diesel-electric locomotives, each of 1000 horsepower, were brought up to Alaska from Schenectady, N. Y. They test-pulled twice as many railroad cars as the two steam locomotives on the Whittier–Anchorage run—and thus wrote a new chapter in farthest-north transportation history.

Said Colonel Ohlson after that pioneering pair of diesel-electrics had made their first round trip, "With no stops for water or cleaning the fire box, the operating costs will be less than for steam engines."

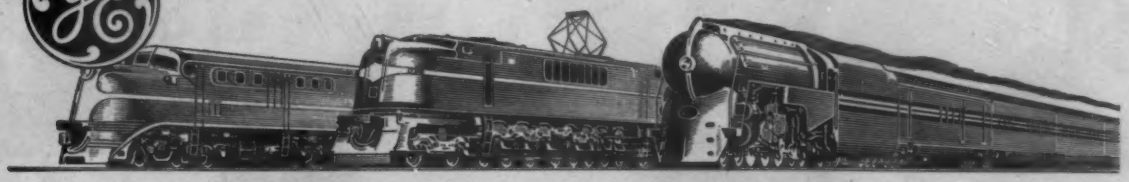
If I ever get to the North Pole like as not I'll be hauled by a diesel-electric—and I won't be surprised if it climbs the Pole!

*—The Trackwalker**

★ ★ ★

Alco GE

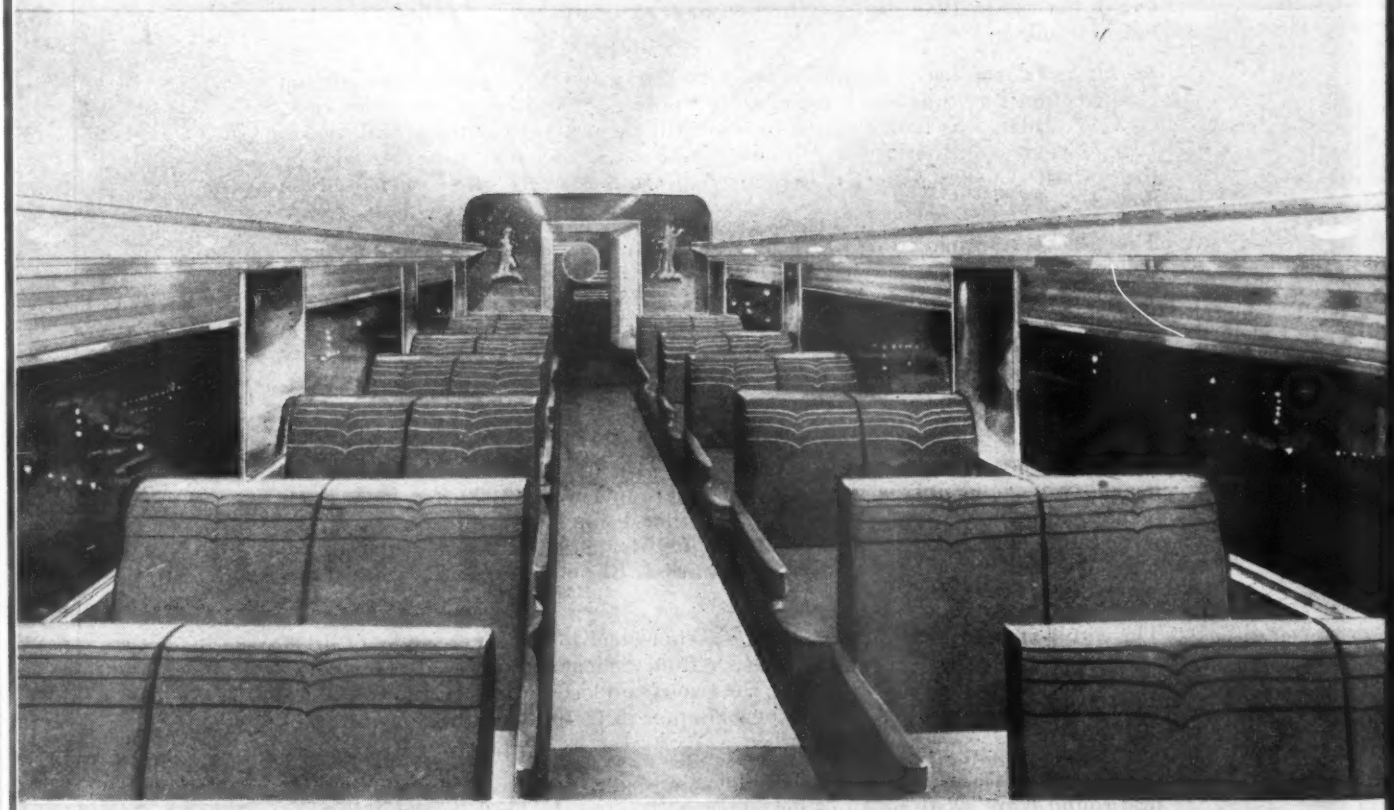
Down in Memphis there are two Alco-G.E. diesel-electrics which have replaced four steamers. They furnish 40 locomotive-hours of switching each day at 30 per cent lower locomotive cost per locomotive hour.

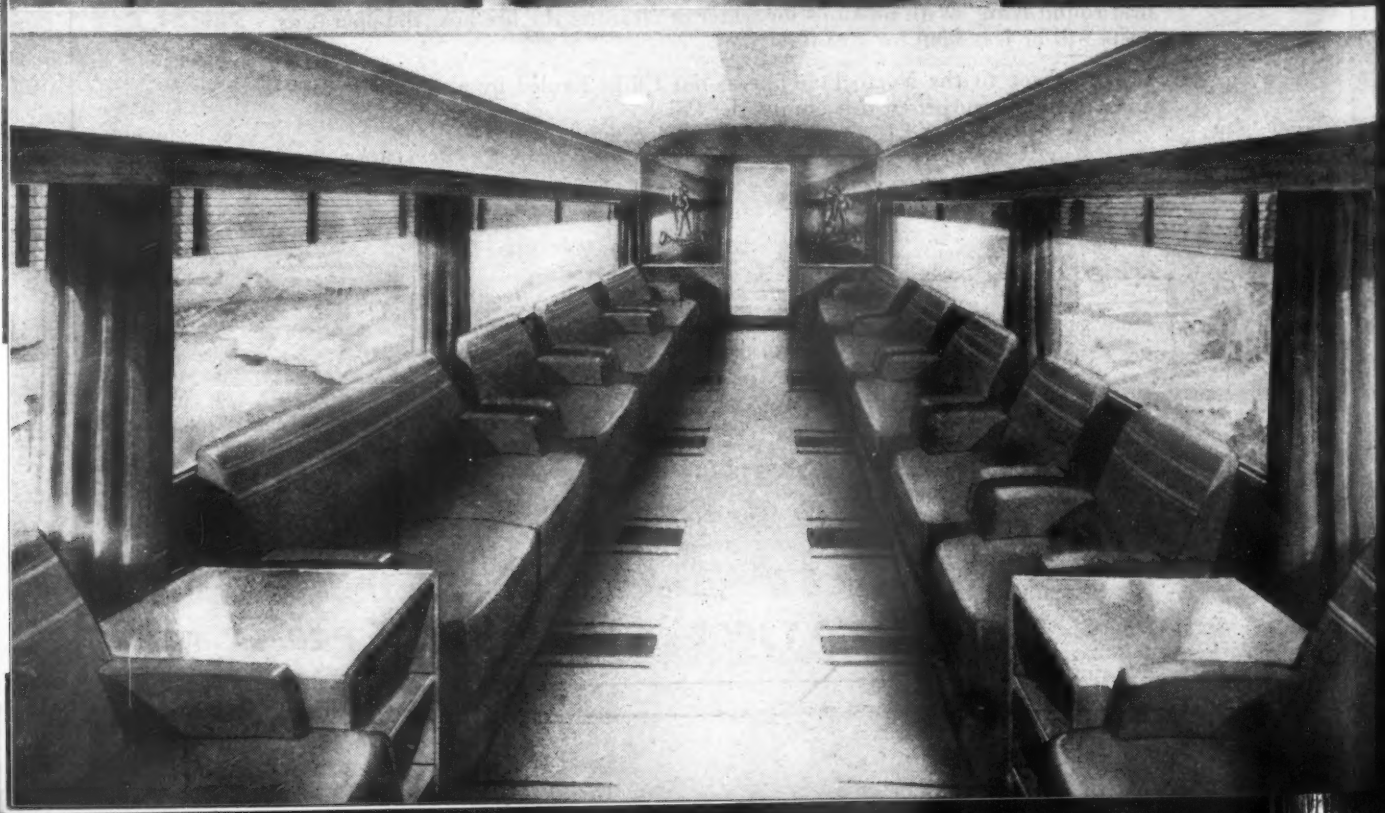


AMERICAN LOCOMOTIVE • GENERAL ELECTRIC

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"Pressed





Steels" Cars

ENCOURAGE AND INCREASE PASSENGER TRAVEL BY RAIL

IN THE post-war period the railways will again be confronted with the challenging competition of other passenger carriers. But railways and manufacturers are prepared to meet this challenge with continued improvement in service and equipment. Pressed Steel Car, pioneers and leaders in steel car construction, points with pride to the progress of the past forty years when the company started the all-steel car era by building the first all-steel passenger car for the Southern. Through intensive engineering research, newer designs, newer materials, progress continued throughout the following four decades, achieving better and better cars for better transportation. Today, Pressed Steel Car is again ready to submit plans and specifications for all types of railway cars, styled and engineered to hold and attract passenger travel. These designs are the acme of perfection for strength, safety, durability, utility, maximum passenger comfort, lower operating costs.

★ ★ ★

PRESSED STEEL CAR COMPANY, INC.

NEW YORK • PITTSBURGH • CHICAGO

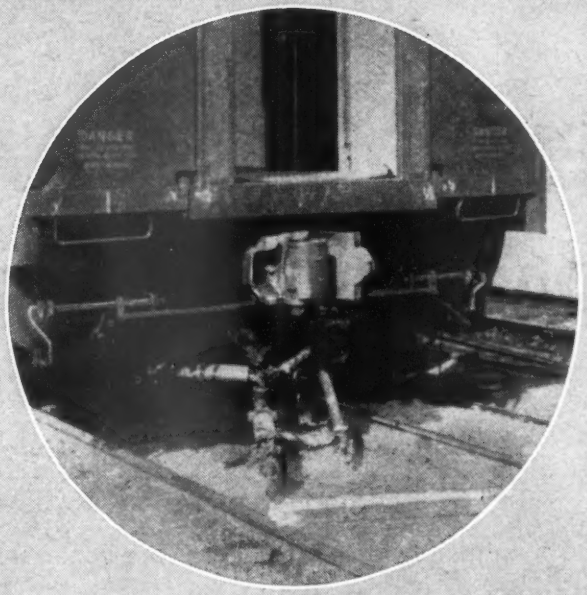
Deluxe HIGH SPEED

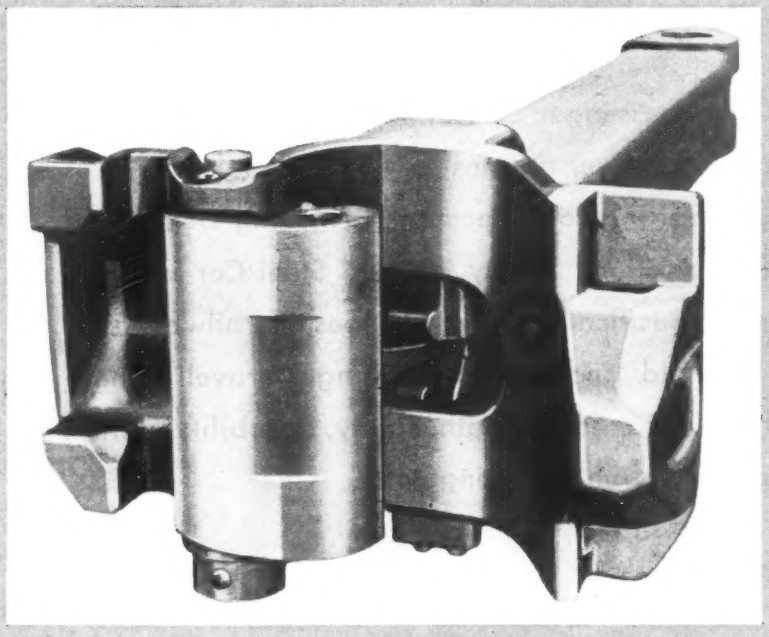
of the post-war era will maximum efficiency and safety

Safety for Passengers... Protection for Equipment

The A. A. R. tentative standard type H Tightlock coupler eliminates objectionable free slack shocks and noises in passenger train operation.

The interlocking safety feature intercouples cars through a rigid column of high-tensile steel, and lessens liability of cars telescoping or overturning in case of accident.





76 Years Service to Transportation

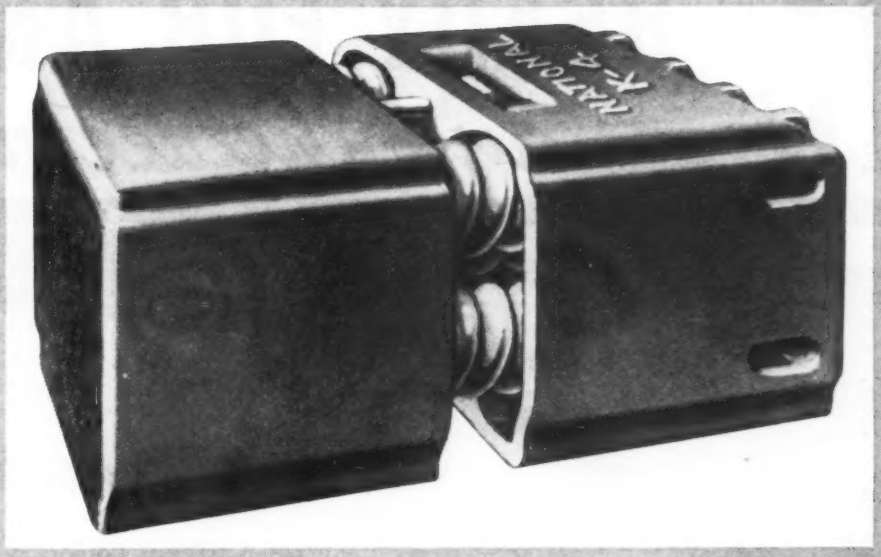
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Sales Offices: New York, Philadelphia, Chicago, St. Louis, San Francisco

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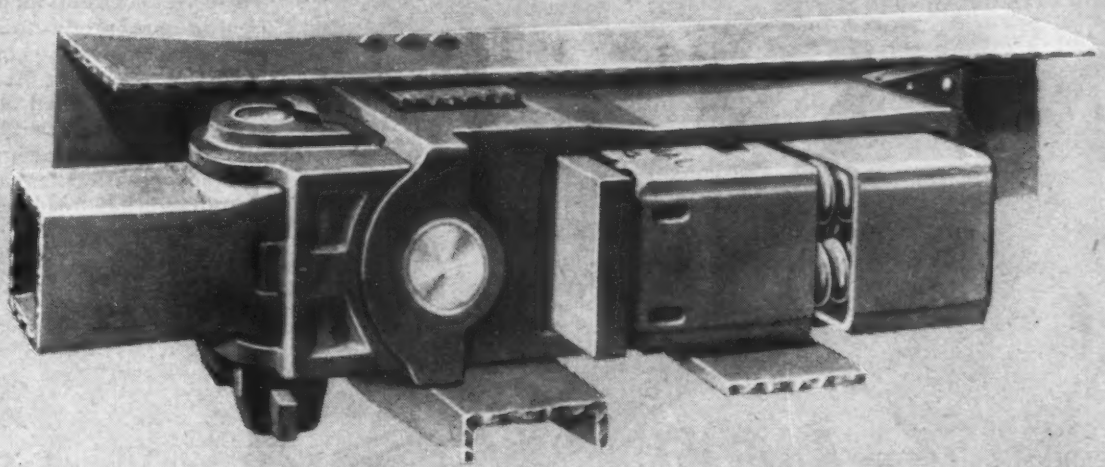
PASSENGER SERVICE

demand equipment of advance design, with



Comfort for Passengers ... Protection for Equipment

The National K-4 dual purpose passenger draft gear is a product of laboratory and road service development. It combines spring resistance for smooth starting and pulsation free riding, and a friction system in a fixed position for absorbing frequent impacts or heavy shocks.



National K-4 Draft Gear applied to car with Tightlock Coupler, swivel connection and yoke.

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RAILROAD RADIO

AAC READY FOR ANY and the record



Experienced -

Aircraft Accessories Corporation railroad communications systems are one of the outgrowths of AAC's many years of commercial and military research and production, which is evidenced in part in our building and designing radio and allied equipment for the Government and leading airlines at the rate of more than 30 million dollars per year.

These years of continuous development and production of advanced types of radio equipment have given Aircraft Accessories vast resources of practical "know-how". This background has been of material assistance in the development of Aircraft Accessories Corporation's railroad radio communications equipment.

AAC Products

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COMMUNICATIONS SYSTEMS

RAILROAD'S USE— *justifies it!*



AIRCRAFT Accessories Corporation's railroad radio communications systems are now available for immediate application to American railroads.

Railroad officers are invited to arrange, through Aircraft Accessories Corporation, for personal, first-hand inspection of the extensive mainline installations of one type of AAC Railroad Communications Systems now in its tenth month of operation on one of the leading railroads in the Heart of America. An accomplished fact, this installation merits your thoughtful investigation... meeting every requirement for end-to-end and moving train to wayside station communication. It has achieved an impressive record in expediting the movement of freight trains, thoroughly demonstrating its efficiency.

From the outset, Aircraft Accessories Corporation has stated and emphasized that: "the application of radio to railroads is a specialized problem." The specific needs, based upon varying operating conditions, must be studied and the proper equipment—space radio or induction carrier system, applied to the railroad.

Instant communication between moving train and wayside stations and between head and rear end of trains supplements existing railroad communication facilities for increased savings in time and operating expense.

ELECTRONICS DIVISION

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SMOOTH RIDING ON "RAILWAY" SPRINGS

"Railway" Springs assure superb riding ease and passenger comfort on high speed equipment. Their mechanical excellence results from an unsurpassed combination of quality materials, ultra-modern machinery, expert workmanship, skilled personnel and long experience. Built-in stamina not only perpetuates their easy riding but results in thousands of extra miles of trouble-free service with minimum upkeep expense.



Alco

AMERICAN LOCOMOTIVE COMPANY

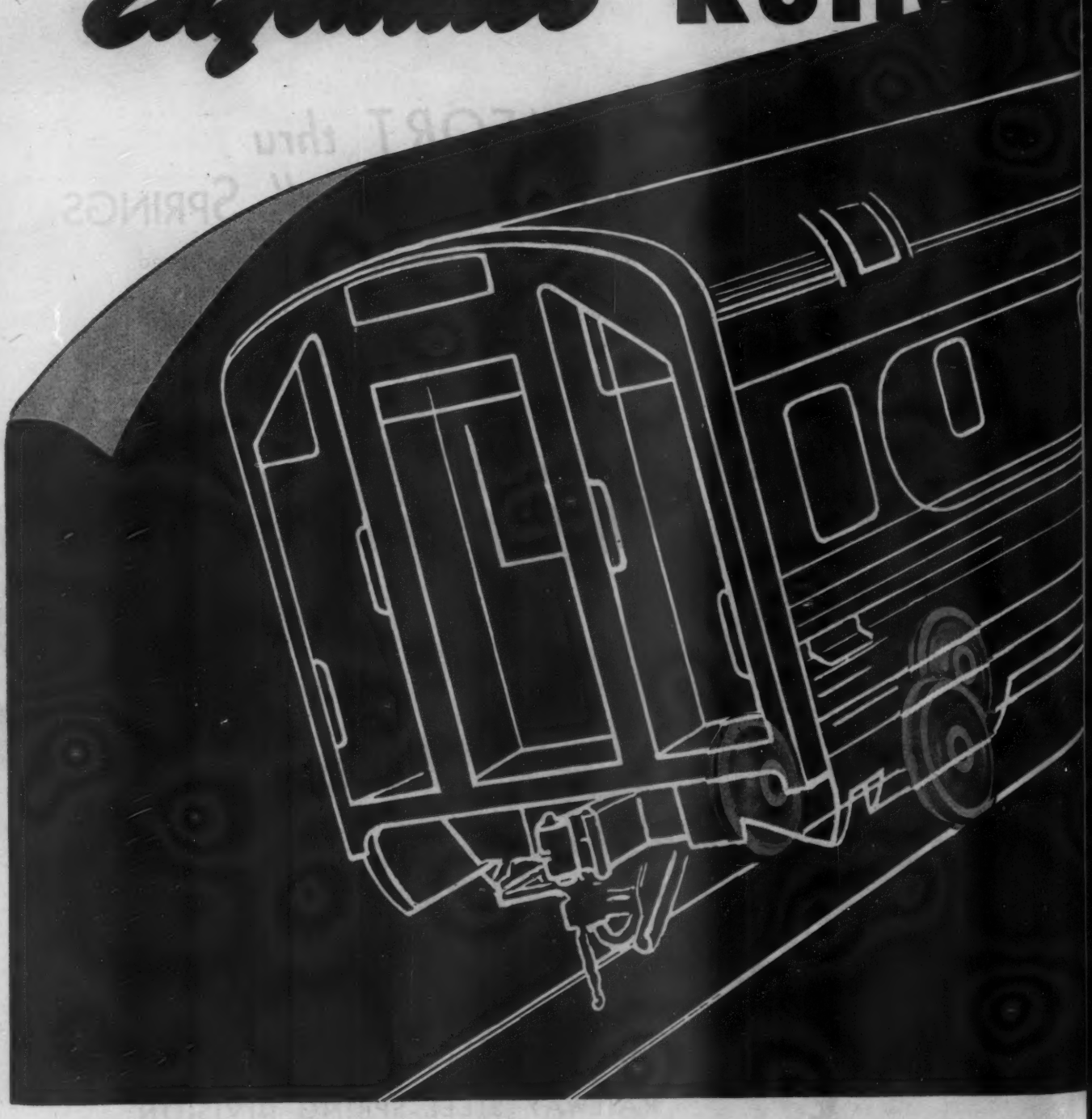
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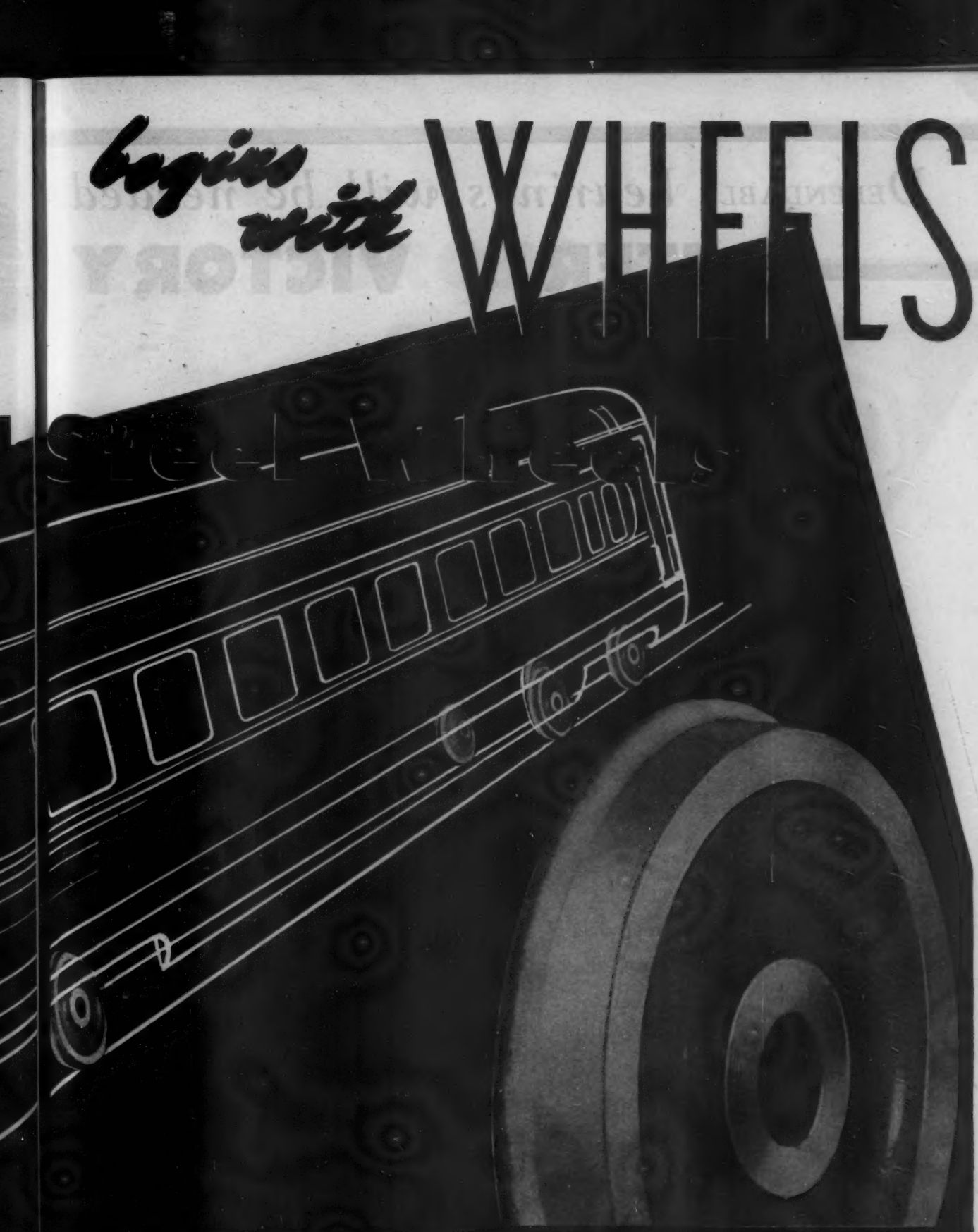
CAR PROGRESS

The cars of tomorrow's faster trains will roll safely and economically on—

Edgewater Rolled



begins with WHEELS

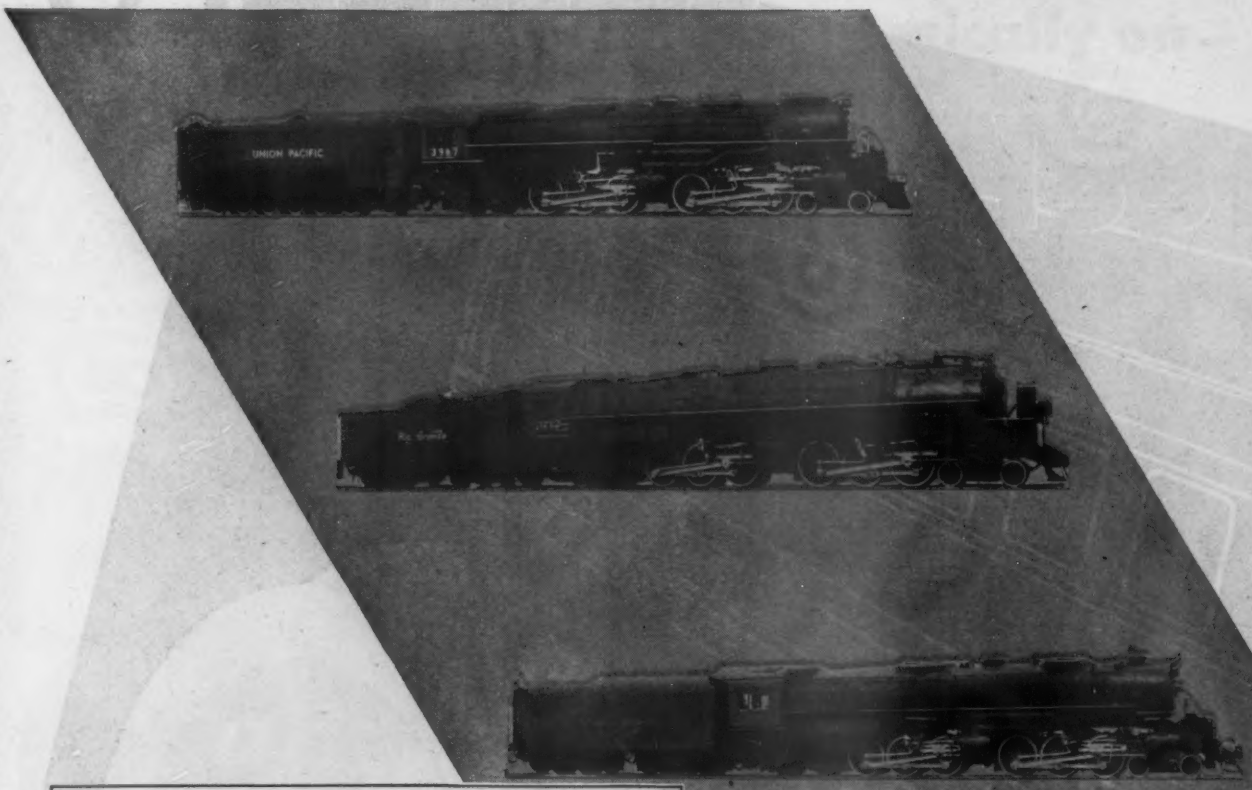


EDGEWATER STEEL COMPANY

PITTSBURGH, PA.

Atlanta, Ga. Baltimore, Md. Boston, Mass. Chicago, Ill. Cleveland, O. Kansas City, Mo. Louisville, Ky. New York, N.Y.
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Dependable bearings will be needed **AFTER VICTORY**







The instant necessary materials are released from war duty, the building of a large number of greatly needed modern passenger cars of all types will begin. *Dependable* roller bearings will be specified because they have demonstrated they are needed for high speed service. Chances are, many of these bearings will be SKF's.

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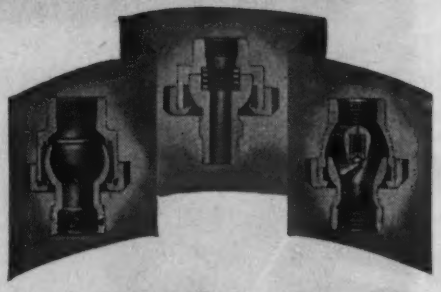
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Modern Conveyors



Fluid-conveying pipes are the arterial system of modern transportation and industry. Barco Flexible Joints are vital links in those systems...giving movement and protection against the destructive action of shock, stress and vibration. For over 30 years they have been a standard accepted universally by engineers and designers for reliability and economical performance. Barco Manufacturing Co., Not Inc., 1800 Winnemac Avenue, Chicago 40, Illinois.

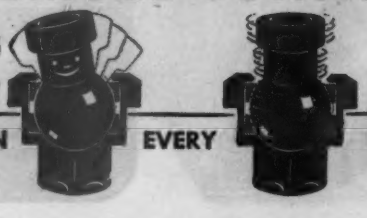
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BARCO FLEXIBLE JOINTS

Not just a swivel joint...but a combination of a swivel and ball joint with rotary motion and responsive movement through every angle.

THE FREE ENTERPRISE SYSTEM IS THE SALVATION OF AMERICAN BUSINESS



"MOVE IN EVERY DIRECTION"

5 years at sea with

PORUS - KROME



Hendrik van der Horst, the inventor of PORUS-KROME, examining a Diesel cylinder liner which has had 5 years' operation since he processed it in Holland.

This cylinder taken from the main Diesel engine of a Dutch merchant ship has had more than 5 years' operation at sea. Moreover, four years ago, the engine was submerged in sea water for fourteen days before the ship was salvaged. Then thirty-five days later, the engine was cleaned up, but nothing needed to be done to the cylinder liners. The engine was put right back into service.

The chrome, which was applied by Hendrik van der Horst in Holland, has just now worn enough to require reprocessing . . . after 5 years of operation, representing over 300,000 miles of ocean travel.

The Chief Engineer of this Dutch vessel, asking to have this liner reprocessed with PORUS-KROME, wrote (in part), "It is my experience that the PORUS-KROME process for cylinder liners tends toward a substantially lower cost in lost hours for overhauling, and accordingly, a considerably higher efficiency of the motor."

In heavy-duty engines . . . other power producing engines as well as marine . . . PORUS-KROME does multiply cylinder life 4 to 20 times, reduce frequency of overhauls and assure more continuous reliable operation. Write for information about applying PORUS-KROME to your engines.

PORUS - KROME

Good for the Life of your Engines

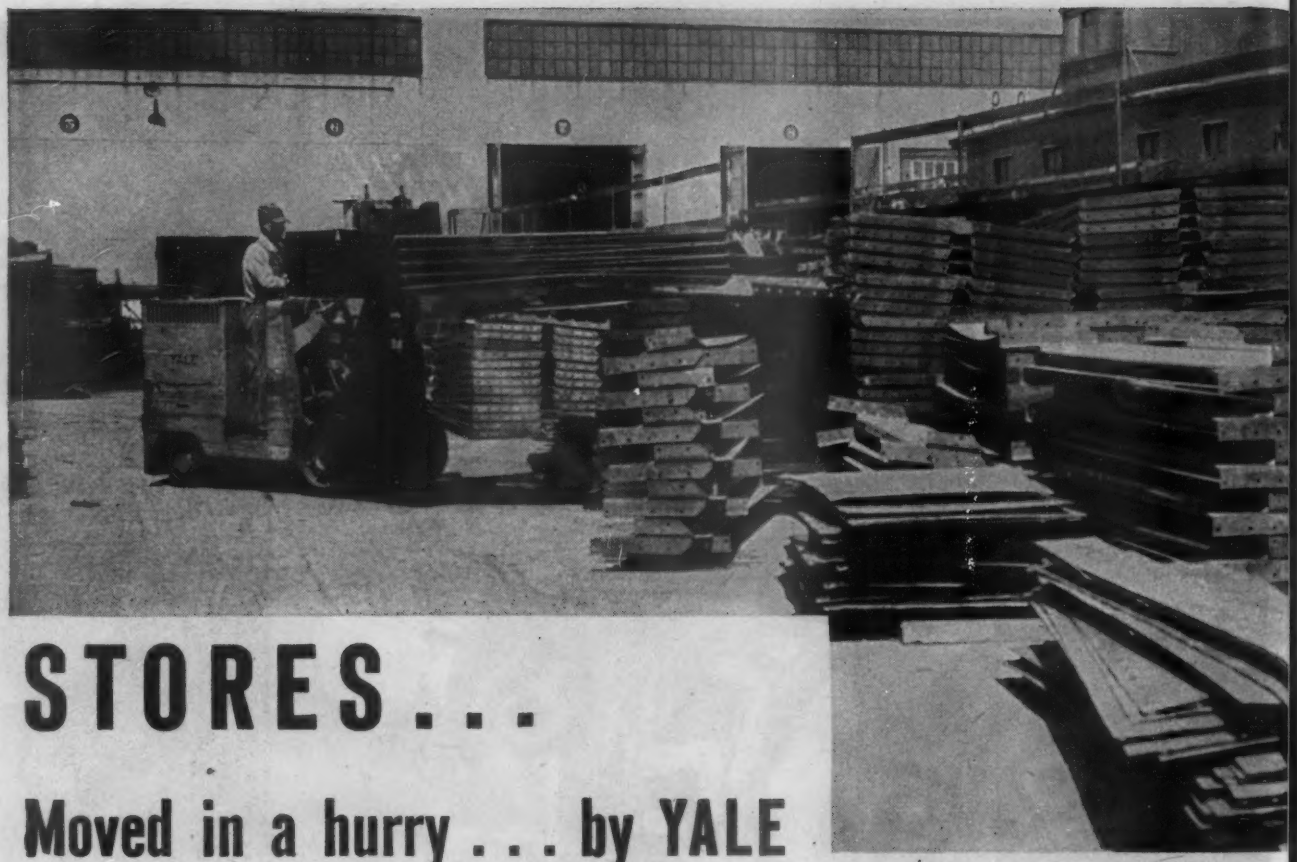
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U. S. PATENTS 2,060,070 AND 2,314,054

VAN DER HORST CORPORATION OF AMERICA

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STORES...

Moved in a hurry . . . by YALE

How to store and distribute quickly the countless parts and products required in supply, maintenance and construction is a constant challenge to railroad storekeepers. They have learned that Yale Materials Handling Machinery can be a big help in reducing *hidden losses* due to unnecessary *re-handling*. That is why fast, efficient Yale equipment is always found where materials have to be lifted, moved, stored, and busy machines must be served.

Find out how Yale Materials Handling Machinery can speed handling and cut costs in your operations. Phone or write for complete information or the help of a qualified engineer.

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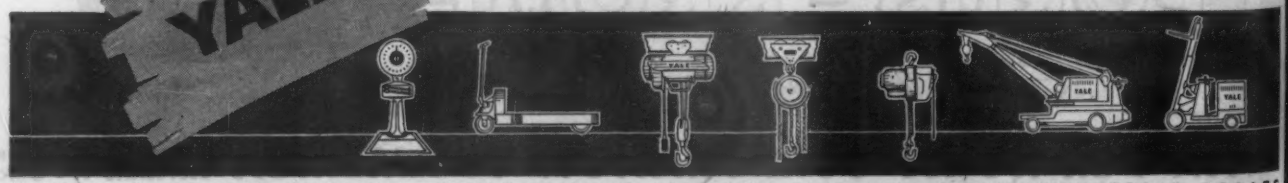
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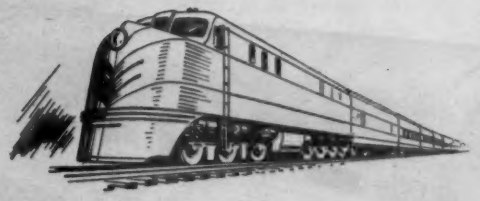
YALE **MATERIALS HANDLING MACHINERY**



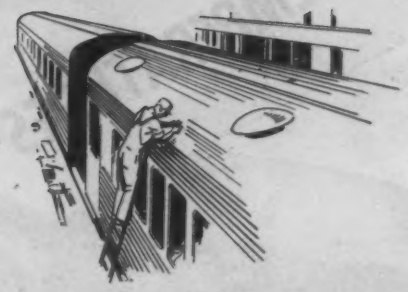
HOISTS—HAND AND ELECTRIC • TRUCKS—HAND-LIFT AND ELECTRIC • KRON INDUSTRIAL SCALES

NEW DESIGNS?

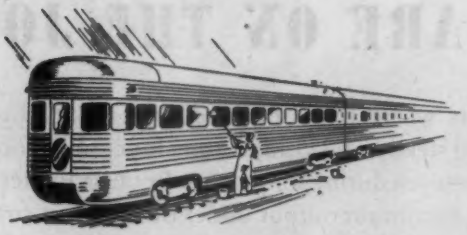
When you write your specifications for new high-speed passenger cars, consider the advantages of stainless steel:



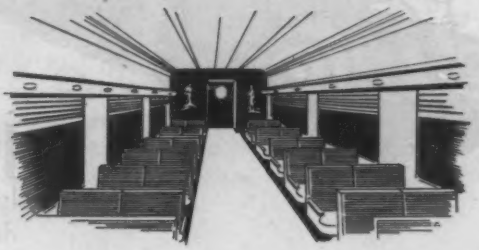
1. **HIGH STRENGTH-WEIGHT RATIO** — this means that cars can be lightweight, without sacrificing the strength necessary for years of safe operation.



2. **EASE OF FABRICATION** — stainless steel is available in many forms and can be shaped and fabricated by all the common methods.



3. **LOW MAINTENANCE** — no coating is needed to protect the bright surface of stainless steel; it is easy to clean and to keep clean.



4. **PASSENGER APPEAL** — good-looking and comfortable, stainless steel streamliners have been consistent moneymakers on roads all over the country.

• Today, designers can profit by the ten years' experience with stainless steel trains to create even better high-speed, lightweight equipment that will give years of service.

Although we do not make stainless or any other steels, we do make many ferro-alloys that give new properties to and improve the quality of steel. If you are interested in the use of stainless steel in railroad cars, write to us for further information. Our metallurgical engineers will be glad to help you.

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ELECTRO METALLURGICAL COMPANY
Unit of Union Carbide and Carbon Corporation
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Electromet
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WHEN EXIDES ARE ON THE JOB

IN passenger cars where Exide Batteries are on duty, lights glow bright and steady, and compressors function smoothly, day and night—even during long stops. Because Exides are designed to give maximum output under the heaviest strain, they maintain their high voltage consistently and stand up strong under the greatly increased demands of today.



Ever since oil lamps were replaced by electric lights, Exide Batteries have been supplying current to America's passenger cars. And when air-conditioning came in, calling for added capacity, there were sturdier, more powerful Exides ready to take on the extra load.

To railroad men throughout the country, the name Exide stands for dependability, long-life and extreme ease of maintenance. They know that when you buy an Exide, you *Buy to Last.*

ARMY E NAVY

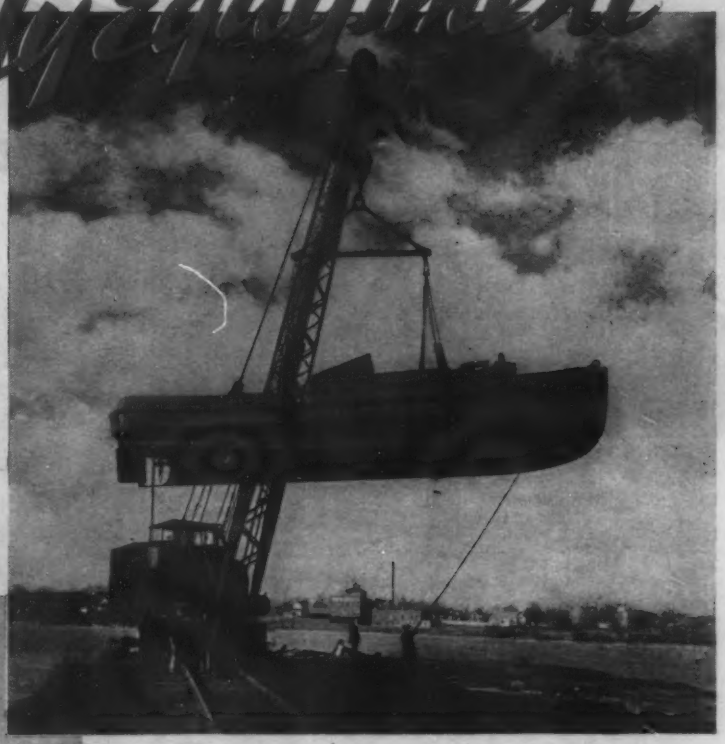
Exide
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

Heavy Duty Equipment

DESIGNED AND BUILT BY INDUSTRIAL BROWNHOIST

From Maine to California, in shipyards, dry docks, ports, steel mills, chemical plants, railroads and in nearly every other kind of industry where efficient material handling is required, Industrial Brownhoist equipment is speeding production and reducing man hours.





Above: An Industrial Brownhoist 40-ton Diesel locomotive crane at a Great Lakes yard easily swings an army boat to flat car after trial run. The patented Monitor-type cab provides 360° visibility, increases operator efficiency. Left: Electrically operated Industrial Brownhoist dumper handling 100-ton cars of coal, dumps coal into proper section.



Right: A 10-15 ton capacity Industrial Brownhoist fast plant for unloading iron ore from lake boats. Moveable lorry rides on runway, weighs ore and delivers it to railroad cars under span.

Write for further facts about Industrial Brownhoist equipment to solve your material handling problem.

INDUSTRIAL BROWNHOIST BUILDS BETTER CRANES

INDUSTRIAL BROWNHOIST CORP. • BAY CITY, MICH. • DISTRICT OFFICES: New York, Philadelphia, Cleveland, Pittsburgh, Chicago • Agencies: Detroit, Birmingham, Houston, Denver, Los Angeles, San Francisco, Seattle, Vancouver, B.C., Winnipeg, Manitoba, Canadian Brownhoist, Ltd., Montreal, Quebec.



Quality Always



The Range of Production at Our 60-acre Car Plant

Streamlined Trains
Passenger Cars
Chair Cars
Dining Cars
Freight Cars
P. C. C. Street Cars
Trolley Coaches
Interurban Cars
Elevated Cars
Subway Cars
Diesel Electric Power Cars and Trains
Baggage Mail Express Cars

Quality—a byword with the St. Louis Car Company in the manufacture and building of railroad cars and car equipment for over half a century. To offer the railroads the best available rolling stock at all times, our alert and efficient engineering talent has always kept abreast of modern design and practices. In numerous instances we have pioneered in the planning and production of transportation equipment.

Today, more than ever before, we are equipped to supply your railroad with the best and the latest type of rolling stock to help maintain your present heavy transportation demands and to put you in step to meet postwar competition.

CONSULT US NOW FOR Your QUALITY Car Equipment

St. Louis Car Co.

ST. LOUIS, MO.



1887 1944

In Our Second Half Century



Thrilling Luxury...

THAT DRAWS THE PASSENGERS!

THERE is no longer any doubt about the competitive advantage of modernly decorated car interiors, the work of top flight interior decorators.

So successful were the many streamliners which employed this passenger lure before the war, there is bound to be a great increase in the level of decorative attractiveness in the new trains.

We are proud that on the majority of the famous streamliners Formica was liberally used for table tops, window stools, shelving in the toilet rooms and many other uses. All of these and more, such as wainscot and ceiling covering will be seen in the trains of the future.

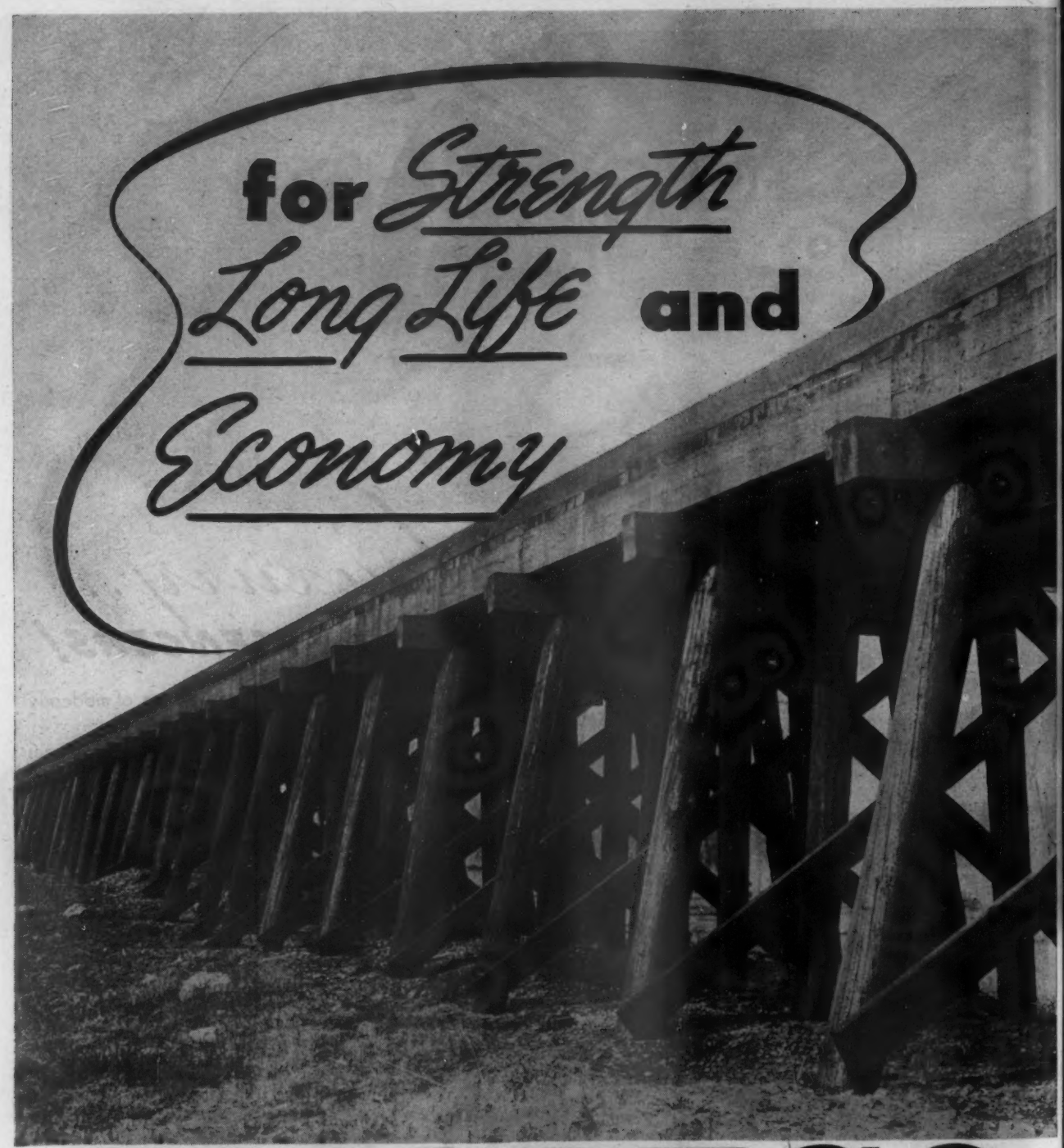
The material has a handsome surface, colors and patterns, will not spot or stain, may be completely cigarette-proof, stands alcohol and cosmetics, and will withstand years of wear.

"The Formica Story" is a moving picture in color showing the qualities of Formica, how it is made and how it is used. Available for meetings of designing and business groups.

FORMICA



THE FORMICA INSULATION CO.
4641 SPRING GROVE AVE.
CINCINNATI 32, OHIO



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AMERICAN CREOSOTING COMPANY

POLES
TIMBER



BIG JOBS DEMAND BIG BRAKES

For two decades, the world's most notable engineering and construction achievements have leaned heavily upon the instant, positive, economical control of Bendix-Westinghouse Air Brakes and Pneumatic Controls as a solution to their transportation problems ★ Gratifying as this distinction is, the fact that this same smooth, effortless system of control functions with unequaled advantages on vehicles over the entire weight and load range, looms as an even greater accomplishment ★ Genuine Bendix-Westinghouse Air Brakes are tailored to the specific job and service. So, if you have a control problem, you'll unquestionably find the answer in this time-tested, power-to-stop ★ There is an authorized Bendix-Westinghouse Distributor in your territory who will be happy to explain the many exclusive advantages of Air Brakes, without obligation.

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE COMPANY . . . ELYRIA, OHIO

Bendix-Westinghouse

AIR BRAKES

AND PNEUMATIC CONTROL DEVICES

IT IS SIGNIFICANT THAT AMERICA'S FINEST MOTOR TRUCK FLEETS ARE EQUIPPED WITH BENDIX-WESTINGHOUSE AIR BRAKES

A.A.R. CAR IMPROVEMENT PROGRAM · *Succeeds* Under Difficult Limitations





CARDWELL M-25
FRICTION DRAFT GEAR
Certified A.A.R.



CARDWELL FRICTION
BOLSTER SPRING
Type A



WESTINGHOUSE NV11-F
FRICTION DRAFT GEAR
Certified A.A.R.

The Car Improvement Program was originated and has been carried on by the A.A.R. Mechanical Division under difficult limitations.

The necessity of universal interchange; the large number of old cars not worth the cost of extensive improvements; the differing requirements, standards and preferences of the many railroads involved; the financial ability of the railroads to carry out the improvement schedules; the varying capacity of railroads to install and maintain improved equipment — all had to be considered.

The program not only strengthened car structures but increased their protection against shocks.

Over 98% of the cars in freight carrying service are A.A.R. construction, and over 96% have Friction Draft Gears.

The shock-absorbing capacity of Cardwell and Westinghouse Draft Gears provides protection for both cars and lading, with an ample factor of safety, resulting in increased availability of equipment.

CARDWELL WESTINGHOUSE CO., CHICAGO
CANADIAN CARDWELL CO., LTD., MONTREAL



PROGRESS born of Yesterday . . . invigorated by the technological advance of Today . . . will give Tomorrow the zenith of excellence in comfortable and luxurious rail transportation.

American railways have done a magnificent job throughout the war period . . . and upon this foundation of distinguished service . . . they face the new travel-era with confidence.

When men and metal and production facilities are again free to serve the needs of a peacetime world, we shall build Aluminum Chairs . . . Tables . . . and other items of equipment built to the traditional GF standards . . . harmonious in color . . . relaxing in comfort . . . styled to serve with distinction.

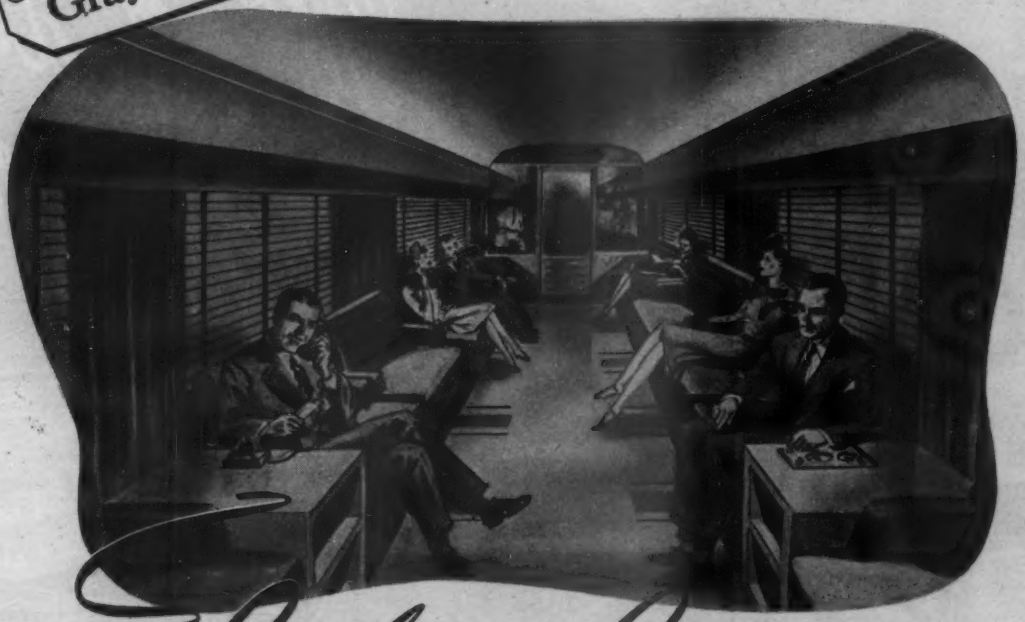
GF
THE GENERAL FIREPROOFING CO.
YOUNGSTOWN 1, OHIO
U. S. A.

The **GENERAL FIREPROOFING COMPANY** • **Youngstown 1, Ohio**

METAL DESKS • ALUMINUM CHAIRS • METAL FILING CABINETS • STEEL SHELVING • FILING SUPPLIES • SAFES • STORAGE CABINETS

via GraybaR

SINCE CARBON-LAMP DAYS . . .



Electrical SUPPLIES for PASSENGER-CAR PROGRESS

When battery operated buzzers and carbon lamps first gave a "touch of tomorrow" to passenger cars, GRAYBAR* was already an old hand in serving the railroad field.

Since then, car builders, in addition to the railroads themselves, have turned to GRAYBAR more and more for the electrical materials that go in the cars: — *conduit, wire, fittings, bells, buzzers, lamps and lighting fixtures, as well as specially-built electrical equipment that add to safety and comfort.*

In present plans for increasingly luxurious passenger travel, greater *electrification within the cars* has an essential role. Individual reading lamps, radios, telephone connections, etc., all call for more wiring — more carefully planned.

"Via GRAYBAR", you'll get the kind of supply service that knows its way around the railroad field. In addition, you'll get the benefits of GRAYBAR'S strong connection with over 200 leading manufacturers of electrical materials — firms which may be developing right now the new product that you've been looking for for post-war use.

A GRAYBAR Man near you is ready to make your electrical supply problems his personal responsibility. Why not take advantage of his time-saving assistance? 5535

*Then known as the Supply Department of the Western Electric Co.

GraybaR

GraybaR QUALITY *REG. U.S. PAT. OFF.

75 YEARS OF Electrical Distribution

IN OVER 80 PRINCIPAL CITIES • Executive Offices: 420 Lexington Ave., New York 17, N. Y.



If it's up to you to select the right bucket for a particular job, Bulletin No. 1989 should be within easy reach... Your request will bring a copy by return mail.

Railroad requirements call for more types and sizes of clamshell buckets than any other industry. Material to be handled, hook capacity, overhead and side clearances all affect the specifications.

Bulletin 1989 classifies, illustrates and describes the Blaw-Knox Buckets most widely used for Ash Pit work . . . Ballast Cleaning . . . Coal Handling . . . Ditching and Excavating . . . River-Rail Transfer, Etc.



BLAW-KNOX DIVISION OF BLAW-KNOX CO.

2061 FARMERS BANK BUILDING, PITTSBURGH, PA.

NEW YORK CHICAGO PHILADELPHIA BIRMINGHAM WASHINGTON

Representatives in Principal Cities

BLAW-KNOX BUCKETS

Will VELON* seating last forever?

Thousands of bus, train, plane, taxicab, subway and trolley car seats in active use today are upholstered in *Velon*.

True, none of these installations are much more than three years old. But these have been wartime years—probably the toughest in the history of transportation in America.

Yet not one of those *Velon* seats has needed to be recovered, or has shown the slightest sign of wear!

Every single one of those seats can be restored to its original fresh brilliant color almost instantly, by wiping it clean with a cloth dampened in water or cleaning fluid. *Velon* won't absorb water, won't let dirt cling, gives grease no foothold. It resists alkalis and acids. It is stainless, non-inflammable. And it won't fade.

Hence every color becomes practical. Light, bright effects, colors you never dared consider before! And *Velon* can be made in almost any conceivable weave or pattern.

Will *Velon* seating last forever? That would be a preposterous claim to make for any upholstery material. Yet so far there is no evidence to the contrary!

P.S. For *completely* modern seating, use *Foamex* cushioning, Firestone's latex foam.



For the best in music, listen to the Voice of Firestone Monday evenings over the entire NBC Network.

ANOTHER CONTRIBUTION TO A BETTER WAY OF LIFE by **Firestone**

*Trademark—pronounced Vel-lón

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on't let dirt cling,
It resists alkalis
on-inflammable.

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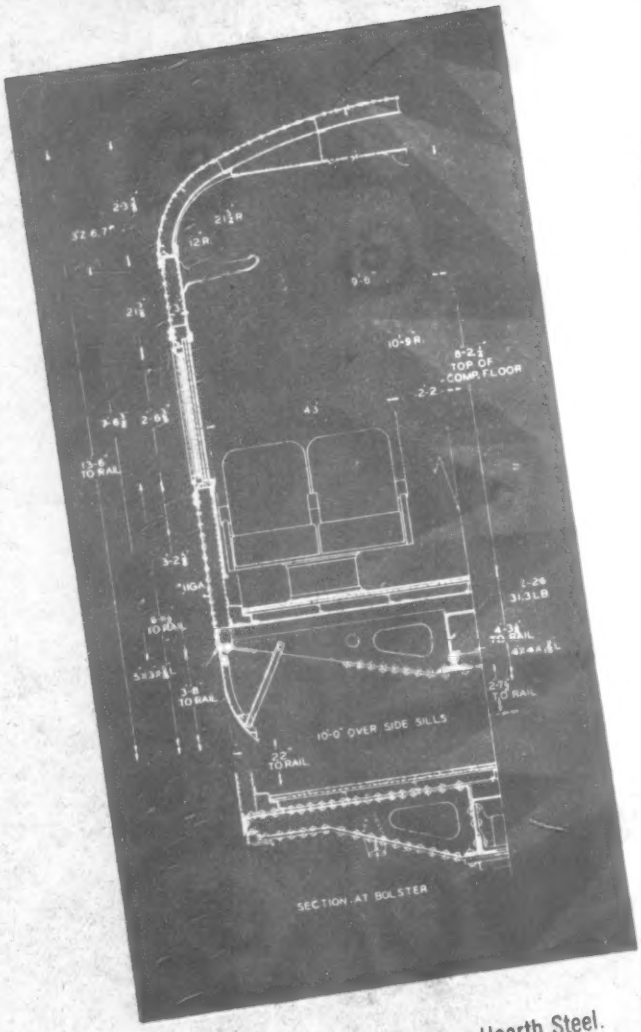
AILWAY AGE



We've been given "THE HIGHBALL!"

NEWS of momentous interest to our many railroad friends has been announced. The War Production Board has allotted materials to A.C.F. for the manufacture of sorely needed new passenger car equipment. Thus A.C.F., one of the first companies to be awarded contracts for the materiel of war, is now the first car builder to be given the "highball" for passenger rolling stock construction.





Framing is Copper Bearing Open Hearth Steel.

Center Sills are Open Hearth Carbon Steel of 36,000 lbs. elastic limit.

Welded and Riveted Construction.

Side and Roof sheets riveted.

Painted Exterior.

"Carbon Steel for me"

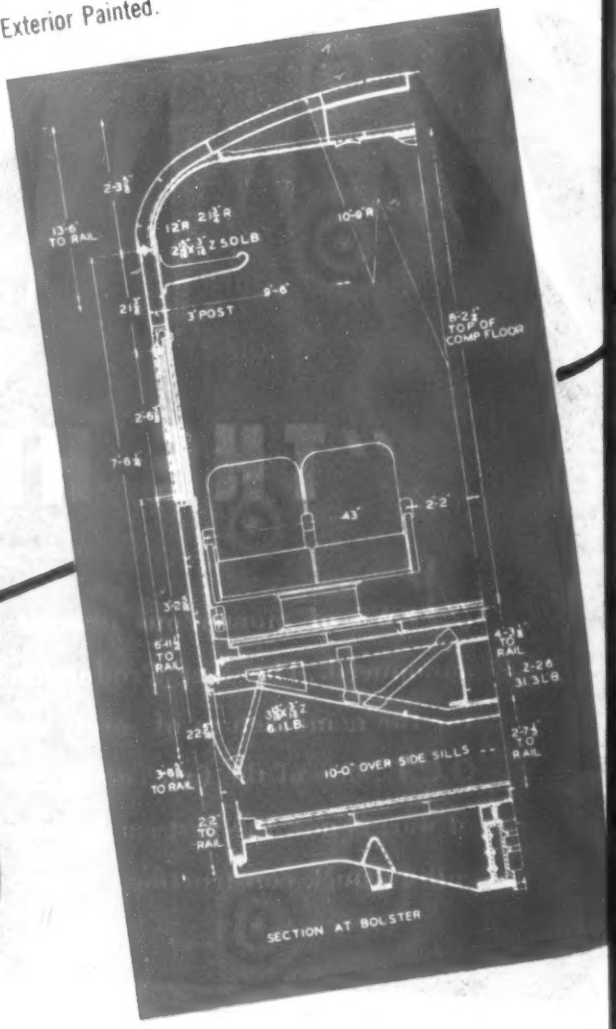
"I like Low alloy, High-Tensile Steel"

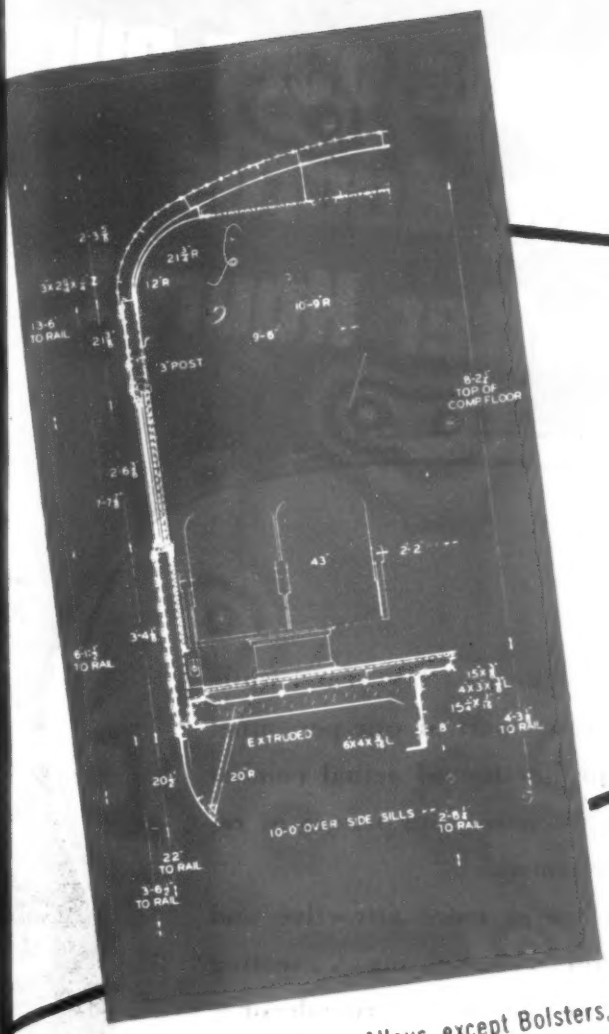
Framing of Low Alloy, High-Tensile Steel, except Center Sills, which are Open Hearth Carbon Steel of 36,000 lbs. elastic limit.

Welded and Riveted Construction.

Sides are Spot Welded, no exposed rivets.

Exterior Painted.





Framing of Aluminum Alloys, except Bolsters, Crossbearers and End Sills of Low Alloy, High-Tensile Steel.

Buffer and Bolster Center Filler of Cast Steel.

Riveted Construction.

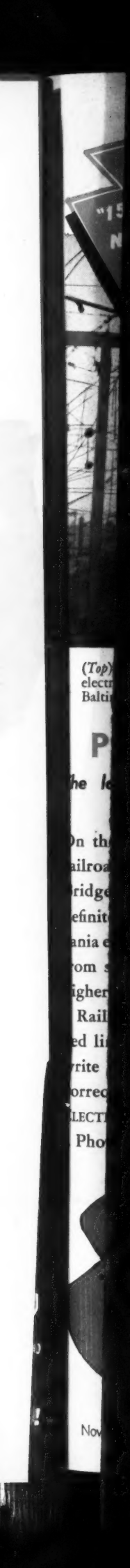
Sides are Fluted Anodized Aluminum Extrusions in Bright Finish.

"Aluminum is the coming Metal"

a.c.f. likes (and uses) them all . . .

is wedded to none!

METALWORKER for many, many years . . . pioneer in notable contributions to the craft of car building . . . a.c.f. sees much good and increased promise in ALL of the basic structural materials. Cooperating with the railroads' own design and engineering departments, we have, as early as 1934, built passenger cars of spot welded construction, using low alloy, high-tensile steels. Literally, before they were out of our yards, we were building aluminum alloy cars for another road for a *different* type of service. For still other operations, we have developed a riveted carbon steel carrier of modern design. All are strong, all are sound, *all have proven highly serviceable* — and all are significant advances over cars previously known — as are other designs both built and in our files.





FOR BETTER SERVICE, BETTER PRODUCTS



Look to America's Finest Passenger Car Plants

THE governmental "go ahead" for the production of passenger equipment by A.C.F. comes at a most opportune time! For, we are now completing the enlargement of plant and facilities at ST. CHARLES to make these shops, together with our extensive war-busy BERWICK facilities, the most modernly equipped plants devoted to passenger car construction *anywhere.*

These improvements are for *one specific purpose* — to serve the railroads better. Whether the order calls for one car or one hundred . . . standard design or special . . . A.C.F. can here meet all requirements and meet them all on time!

Today, at St. Charles, is housed the skill and the man and machine power to build passenger cars setting a new high and authoritative standard in de luxe accommodations.



The Lights over our Drafting Boards burn after Hours!

DURING the past few years, while a considerable part of our personnel has been engaged in either the production of actual combat materiel or rolling stock for war purposes, our tempo of research and design has actually accelerated.

New ways to make passenger travel more attractive and hence more profitable . . . new fluorescent lighting . . . seating comfort . . . air-conditioning . . . interior and exterior decor — a legion of other advances — these have "kept us up" and kept us planning.

From utility baggage car to luxury diner — in coaches, club and chair cars, this planning for progress has produced many improvements to make these cars long-life, competition-proof PRODUCERS for railroads in the years ahead.

a.c.f.

AMERICAN CAR AND FOUNDRY COMPANY

NEW YORK • CHICAGO • ST. LOUIS • CLEVELAND • WASHINGTON • PHILADELPHIA • PITTSBURGH • ST. PAUL • SAN FRANCISCO

Whatever a.c.f. Builds . . . It is Known to Build Well!



(*Top*) S
electric
Baltimo

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railroad
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"15,947,250,000 NET TON MILES; 6,455,090,000 PASSENGER MILES

Moved Over Our Electrified Lines in 1943"

REPORTS THE PENNSYLVANIA RAILROAD



(*Top*) Streamlined electric locomotive, type GG1, on P.R.R.'s fast through electric passenger service between New York, Philadelphia, Paoli, Pennsylvania, Baltimore and Washington.

PHONO-ELECTRIC BRONZE

The long-wearing catenary wire powerfeeds the world's greatest electrified trackage

On the pioneer PENNSYLVANIA Line, more than on any other railroad in the world, electrification has received its severest test. Bridgeport's PHONO-ELECTRIC* BRONZE Catenary has made a definite contribution to the acknowledged success of the Pennsylvania electrification. Its resistance to arcing flashover—its freedom from sag and creep—its greater tensile strength which permits higher operating tensions—all result in lowered maintenance costs.

Railroad executives who are planning extension of new electrified lines or rehabilitation of existing equipment are invited to write for the 80-page illustrated booklet on the importance of correctly designed catenary equipment. Just ask for "PHONO-ELECTRIC" Book, or if you prefer more specific information, ask a Phono-Electric engineer to call.

* *Trade Name*



(*Middle*) View of P.R.R.'s Sunnyside yard at Long Island City, largest passenger yard in the world, completely electrified.



(*Bottom*) Catenary system as used on P.R.R. electrification; shows 4 track beam curve construction between Iselin and Colonia, New Jersey.

PHONO-ELECTRIC Bronze

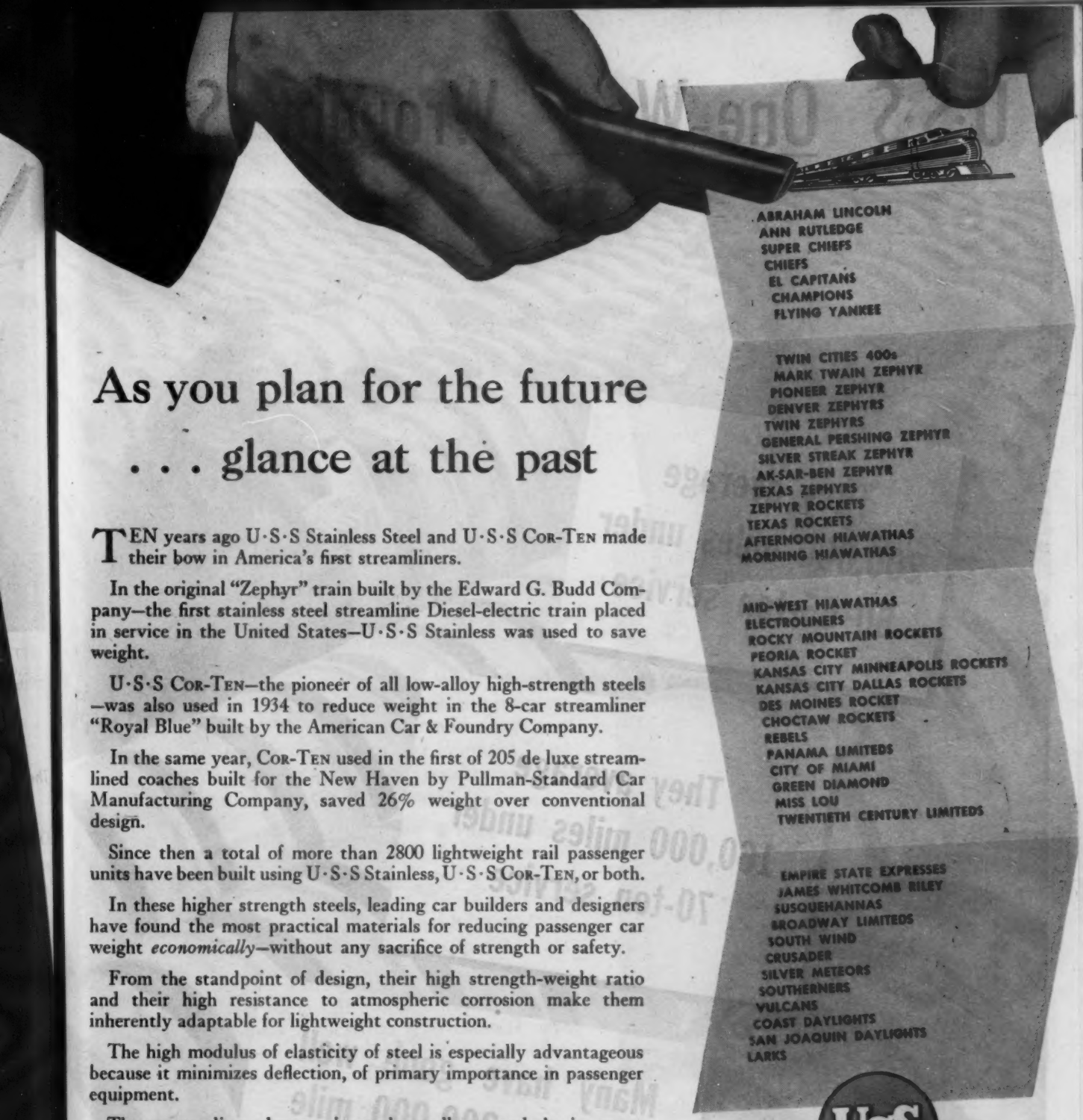
BRIDGEPORT BRASS COMPANY

Remember...

79% of the famous traffic-building streamliners that proved the value of fast, comfortable, modern rail travel have been built with U·S·S Stainless Steel, U·S·S COR-TEN or both.



UNITED STATES



As you plan for the future . . . glance at the past

TEN years ago U·S·S Stainless Steel and U·S·S Cor-Ten made their bow in America's first streamliners.

In the original "Zephyr" train built by the Edward G. Budd Company—the first stainless steel streamline Diesel-electric train placed in service in the United States—U·S·S Stainless was used to save weight.

U·S·S Cor-Ten—the pioneer of all low-alloy high-strength steels—was also used in 1934 to reduce weight in the 8-car streamliner "Royal Blue" built by the American Car & Foundry Company.

In the same year, Cor-Ten used in the first of 205 de luxe streamlined coaches built for the New Haven by Pullman-Standard Car Manufacturing Company, saved 26% weight over conventional design.

Since then a total of more than 2800 lightweight rail passenger units have been built using U·S·S Stainless, U·S·S Cor-Ten, or both.

In these higher strength steels, leading car builders and designers have found the most practical materials for reducing passenger car weight *economically*—without any sacrifice of strength or safety.

From the standpoint of design, their high strength-weight ratio and their high resistance to atmospheric corrosion make them inherently adaptable for lightweight construction.

The high modulus of elasticity of steel is especially advantageous because it minimizes deflection, of primary importance in passenger equipment.

The outstanding advances in steel metallurgy and the improvements in steel production practices that the war has accelerated are now reflected in these fine steels.

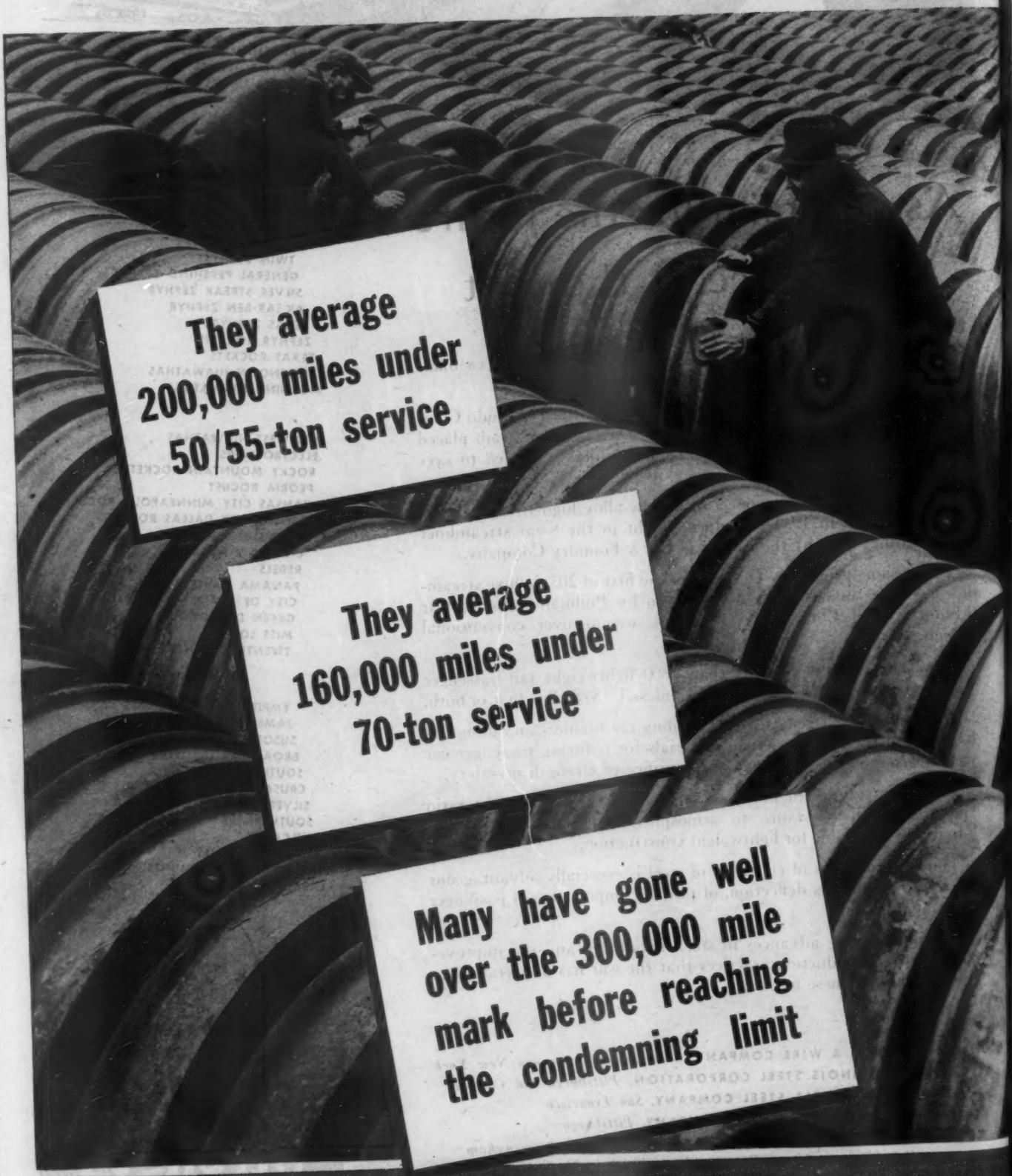
AMERICAN STEEL & WIRE COMPANY, *Cleveland, Chicago and New York*
CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY, *San Francisco*
NATIONAL TUBE COMPANY, *Pittsburgh*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*
United States Steel Supply Company, Chicago, *Warehouse Distributors*
United States Steel Export Company, New York

USS

High Strength Steels

STEEL

U·S·S One-Wear Wrought Steel



UNITED STATES

Wheels *deliver the goods!*

IF you want safe, fast freight service under the heavy loads you are hauling today, here are the wheels that will give it.

No other freight car wheels cost so little to run. On a basis of cost per thousand miles, U·S·S One-Wear Wrought Steel Wheels average substantially less than the cost of freight car wheels of other materials.

No other wheel assures comparable safety both to vital loads and precious rolling stock. That's important today when high speeds and heavy loads are wartime musts. Everywhere these wheels have been adopted, derailments and delays due to wheel failure have been sharply reduced.

They improve service. Wheel changes are always a bugbear, especially in interchange. They cost time and they cost money. U·S·S One-Wear Wrought Steel Wheels stay in serviceable condition longer, keep cars off the repair track.

Today, some 3,200,000 Wrought Steel Wheels are being used in freight service. More than 80% of all 70-ton freight cars are equipped with them. Here's assurance of their ability to stand up under exacting conditions.

If you want your freight equipment to deliver the goods not only now but in the strenuous service that after-the-war competition will demand, change over to U·S·S One-Wear Wrought Steel Wheels.



CARNEGIE-ILLINOIS STEEL CORPORATION

Pittsburgh and Chicago

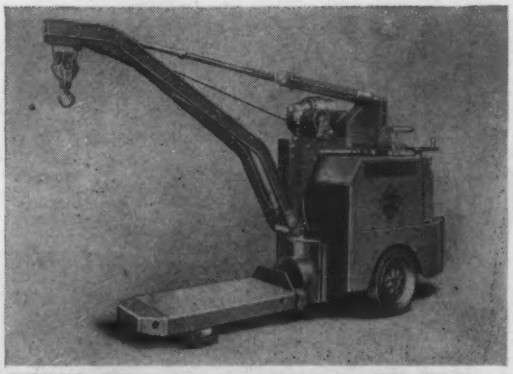
United States Steel Supply Company, Chicago, *Warehouse Distributors*

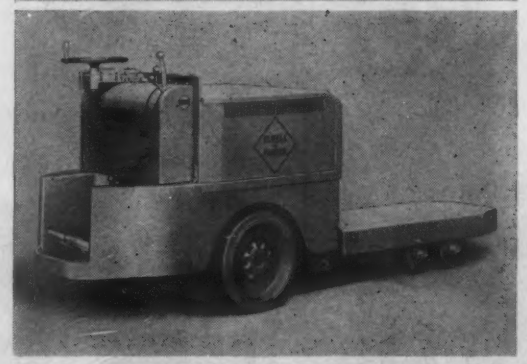
United States Steel Export Company, New York

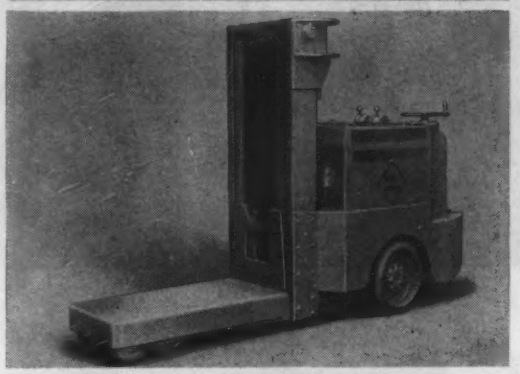
USS

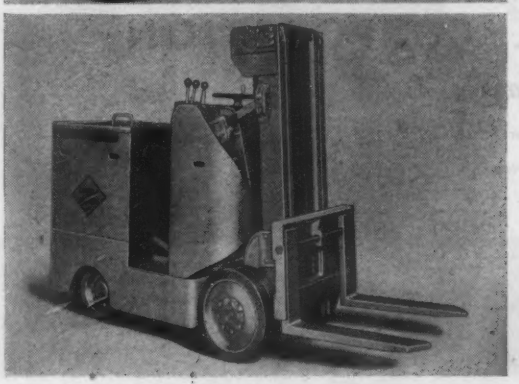
STEEL

"We must utilize remaining manpower by installing Trucks to









A Railway Executive writes:—"The loss of men to the Armed Services makes it imperative to provide mechanical means for handling Locomotive Shop loads weighing tons. *We must have more Elwell-Parkers*".

He is *getting* them—and so are *you*—as fast as priorities and other restrictions permit. Whole fleets of them are helping the Railroads to do the biggest job in their history.

And scores of the Elwell-Parkers you bought in the early 1920's are again "up and at it" now—24 hours a day. *That's the way we build!*

Send for the Elwell-Parker Railway Specialist today. He can supply—soon, we hope—Truck and Crane Systems to eliminate *still more* load-transportation waste in all of your Shops, Terminals and Stores operations.

The Elwell-Parker Electric Company, 4250 St. Clair Avenue, Cleveland 14, Ohio.



DIAL THE EP MAN TODAY!

Albany.....2-4095	Ft. Worth.....4-6184
Birmingham....3-3323	Greenville.....534
Boston.....COM 5522	Indianapolis..LI 3131
Buffalo.....GR 7664	Jacksonville....5-1384
Charlotte.....5026	Kansas City..VA 7021
Chicago.....SUP 7420	Los Angeles...PR 5911
Cincinnati....MA 0650	Memphis..... 8-1648
Cleveland....MA 8915	Milwaukee...MA 7817
Columbus....AD 4824	Minneapolis..GE 3247
Denver.....KE 5500	Montreal.....HA 7191
Detroit.....MA 2233	New York.COR 7-0797
	New Orleans,MA6316-C
	Philadelphia.LOM 3710
	Pittsburgh ...AT 6734
	St. Louis.....LA 4545
	San Antonio...TR 3653
	San Francisco.GA 1827
	Seattle.....EL 5722
	Syracuse.....3-9596
	Toronto.....WA 1478

keep Locomotives operating"



ELWELL-PARKER

POWER INDUSTRIAL TRUCKS


SPEEDY
BULLARD
R.R. SHOP
UNITS

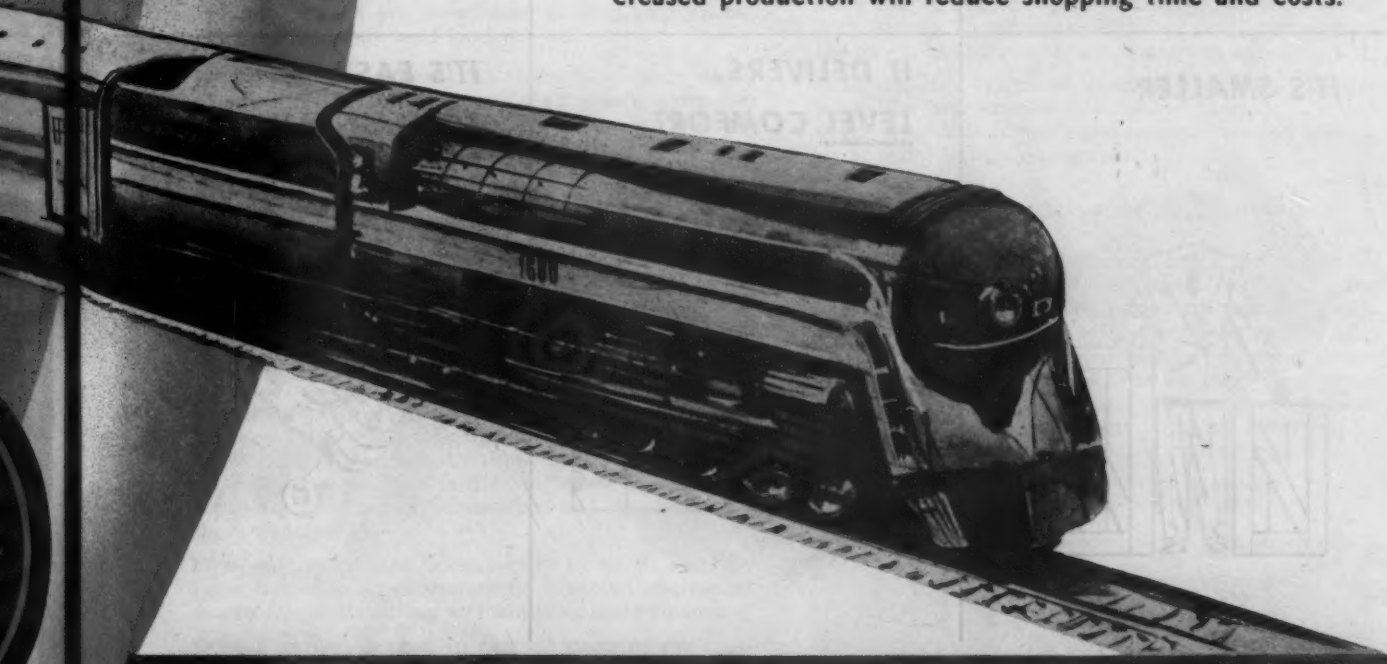
SHOP SCHEDULES

JUST AS IMPORTANT AS *Fast Train Schedules*

PRESENT day train speeds and post-war plans for further improvements in operation demand repair facilities which will speed your locomotives through the shops at a faster pace.

The Bullard line of railroad shop units, which include specially designed driving box borers, cylinder bushing machines, standard vertical turret lathes and the new cutmaster type V.T.L.'s have proven to be a most important factor in the speeding up of schedules in many railroad shops throughout the country.

Deliveries have been made recently to a number of large railroads—more orders are coming through. Why not back up the requisitions of your mechanical department. Your shop supervisors want BULLARDS because they know that the increased production will reduce shopping time and costs.



THE BULLARD COMPANY

BRIDGEPORT 2, CONNECTICUT

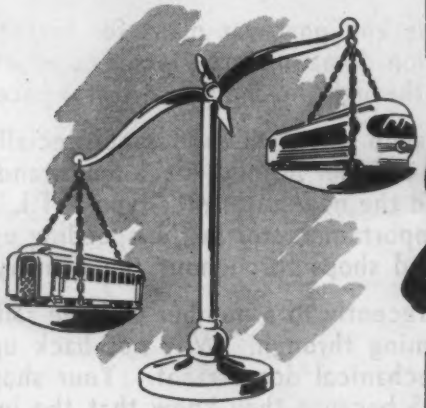






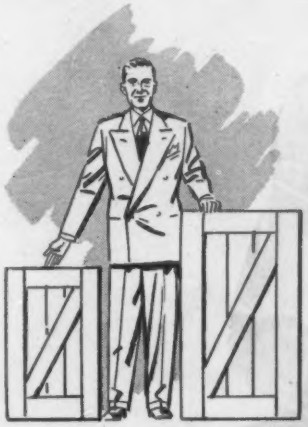
IT'S DESIGNED AND WAITING FOR YOUR NEW CARS

IT'S LIGHTER

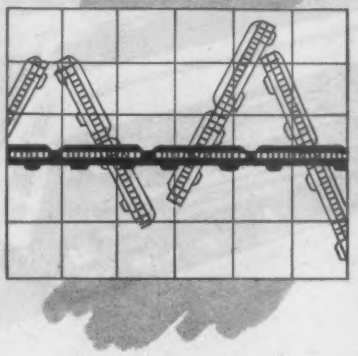


Improved STURTEVANT

IT'S SMALLER



IT DELIVERS
LEVEL COMFORT



IT'S EASY
TO MAINTAIN



B. F. STURTEVANT COMPANY · HYDE PARK, BOSTON 36, MASS.

AIR CONDITIONING

Sturtevant engineering skill has kept pace with your own plans for new passenger cars... designing further refinements into air conditioning equipment that put you nearer to tomorrow's practical goals of light, speedy, comfortable, economically-operated cars. Ready for you now are Sturtevant equipment and systems that lengthen the comfort zones ...trim tonnage of streamliners... fit into finicky spaces... cut inspection and maintenance time. These few details will illustrate:—

Lighter Equipment — The new Sturtevant Compressor-Condenser unit, for example, tips the scale at less than 1900 pounds. The compressor itself weighs under 300 pounds—including the flywheel! Weight of the new Fan-Evaporator — complete — totals less than 550 pounds. Also in this lightweight class are Sturtevant's new dry surface Condenser Unit and the Evaporative Condenser using spray water.

No need to tell you how these savings step up the proportion of pay load hauled.

Smaller Units — Sturtevant has trimmed its units down to fighting size—to fit into the snug spaces allotted to auxiliary equipment in tomorrow's cars. For instance a complete 7-ton capacity Compressor-Condenser unit measures only 25" x 84" x 40"—and a similarly rated Fan-Evaporator unit tapes only 20" x 44" x 52".

Yes, they're small—but without sacrificing cooling efficiency. Blower fans supply enough air for the average coach—2400 c.f.m. at 1⅛" s.p.—using a single 1 h.p. motor! And in lounge cars and diners, ½ and ¾ h.p. motors are adequate. Compressor efficiency, too, has been stepped up—cutting horse-power costs per ton of refrigeration.

Easy Maintenance — Tomorrow's schedules, calling for longer runs and less time off-the-road, will cut deeply into available maintenance time. Typical of our planning along these lines is the Sturtevant Compressor-Condenser, in which maintenance and inspection are shortened 2 ways:—

First, the compressor doesn't cycle 10 to 12 times an hour, but operates *continuously*. Wear on equipment due to frequent starting and stopping is eliminated.

Second, valves, gauges, in fact all parts of the compressor have been positioned within easy reach. Parts that need attention get it in a hurry. The entire compressor can be taken down quickly and put together easily with ordinary tools—no special tools or fixtures are needed.

Comfort That Stays Put — There's no place in tomorrow's cars for air conditioning that cycles between "too hot" and "too clammy"! That's why you'll want to plan on flattening such fluctuations in temperature and humidity with the new Sturtevant system that synchronizes equipment operation. Unloading valves cut *one half* of the compressor cylinders in or out, depending on refrigeration demands, while the divided Fan-Evaporator cuts its output correspondingly. This leaves some coils always operative—forestalling re-evaporation of the moisture and consequent flutters in humidity.

Actually, this system delivers full cooling capacity when the temperature rises above "ideal" . . . and exerts a holding action when temperature and humidity are within the comfort zone.

WE'LL WORK WITH YOU NOW

Any type of car you are planning now can benefit by the reduced size, weight and maintenance . . . the stepped-up efficiency of a new Sturtevant system. That's why it will pay you to get in touch with us. We may be able to help you streamline your planning now—and save time and money later on. Whatever your needs—pressure ventilation, complete ice or mechanical air conditioning—a Sturtevant Engineer is on call to help you to "put air to work", using tomorrow's methods and equipment.

Sturtevant
REG. U. S. PAT. OFF.
Puts Air to Work



To make sure they're safe— make sure they're

BLAW-KNOX

ELECTROFORGED STEEL RUNNING BOARDS AND BRAKE STEPS

Freight moves faster when the trainman has "twisted bar" safety under foot. ¶ On Blaw-Knox Electroforged Steel Running Boards, he's as sure-footed as a cat. His moves, atop the car, are confident and swift. Naturally, inevitably — freight moves faster when the danger's less.

Note the twist! There's the secret of sure footing. The twisted cross bars are forced into serrated bearing bars, electroforged into one inseparable unit — light, strong, self-cleaning, long-lasting, safe!

BLAW-KNOX DIVISION OF BLAW-KNOX COMPANY

2061 FARMERS BANK BUILDING, PITTSBURGH, PA.

Over half the Streamliners use WAUKESHA

ENGINE-DRIVEN EQUIPMENT



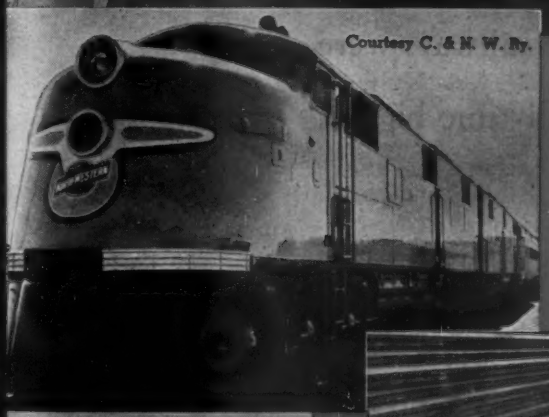
Courtesy Rock Island R.R.

● America's greatest streamliners have luxurious comfort—cooling and lighting—continuous and uniform—supplied by Waukesha Engine-Driven Air Conditioning and Generator Units.

Stepped-up operating schedules and super-comfort have captured the cream of America's passenger traffic for these great trains. Waukesha, light, economical, dependable, engine-driven units make an important contribution to this operation.

They are independent of train movement, weather conditions or location—impose no parasite load on the locomotive—are entirely automatic and serve on demand.

Nearly a decade of outstanding service, with millions of miles of operation, have *tested* and *proved* this Waukesha equipment. The experience and recommendations of railway men directly concerned with its operation and maintenance have resulted in *added refinements and improvements.* As soon as manufacturing authority is granted, this equipment will be in production and available for your requirements. Write us today.



Courtesy C. & N. W. Ry.

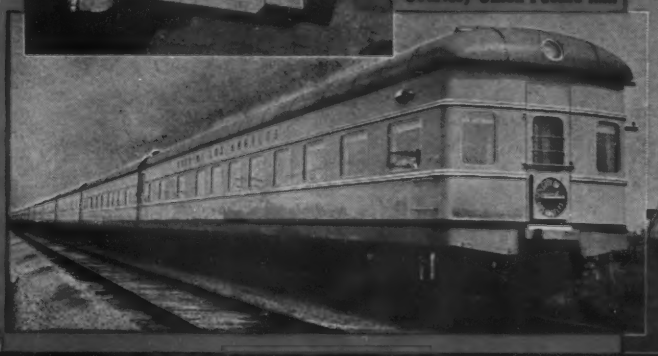






Courtesy Southern Pacific Lines

Courtesy Illinois Central R.R.
Courtesy Union Pacific R.R.





Courtesy The Milwaukee Road

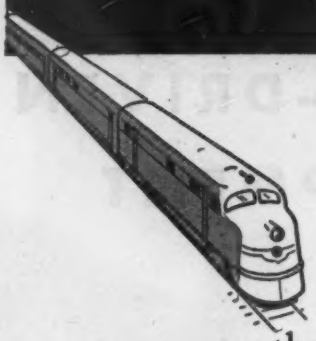


REFRIGERATION DIVISION

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

Largest Builders of mobile, engine-driven Refrigeration and Generator Equipment

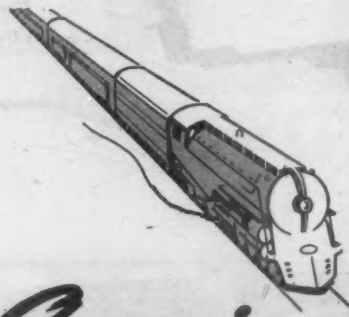
S I N C



When the history of World War II is written, the part played by American railroads undoubtedly will be recorded as one of the nation's greatest war industry achievements. In a war whose every phase is colossal, the railways were required to take on the world's all-time biggest job of railroading.

Their splendid handling of the job testifies to great administrative ability and the highest type of operating skill.

One of the factors in dependable operation is lubrication. Sinclair is very proud of having a share in this part of a great accomplishment.



Used by **150** *American Railroads*

L A I R

★ **SINCLAIR SUPERHEAT VALVE OIL–**

A high viscosity, high film strength oil with high flash and fire points. This oil has great adhesion qualities on the working surfaces of locomotive valves and cylinders and provides dependable lubrication under conditions of extreme heat and high pressure.

★ **SINCLAIR DRIVING JOURNAL COMPOUND–**

A grease that starts feeding at low temperature and assures a steady film for efficient lubrication of driving journals at high or low speeds regardless of atmospheric temperatures.

★ **SINCLAIR HIGH SPEED ROD CUP GREASE–**

A grease that contains a high percentage of rich Pennsylvania oil assuring a thick, steady oil film with the right thickness to stay put on main and side rod pins. Excellent for heavy power in fast service.

★ **SINCLAIR CAR AND ENGINE OILS–**

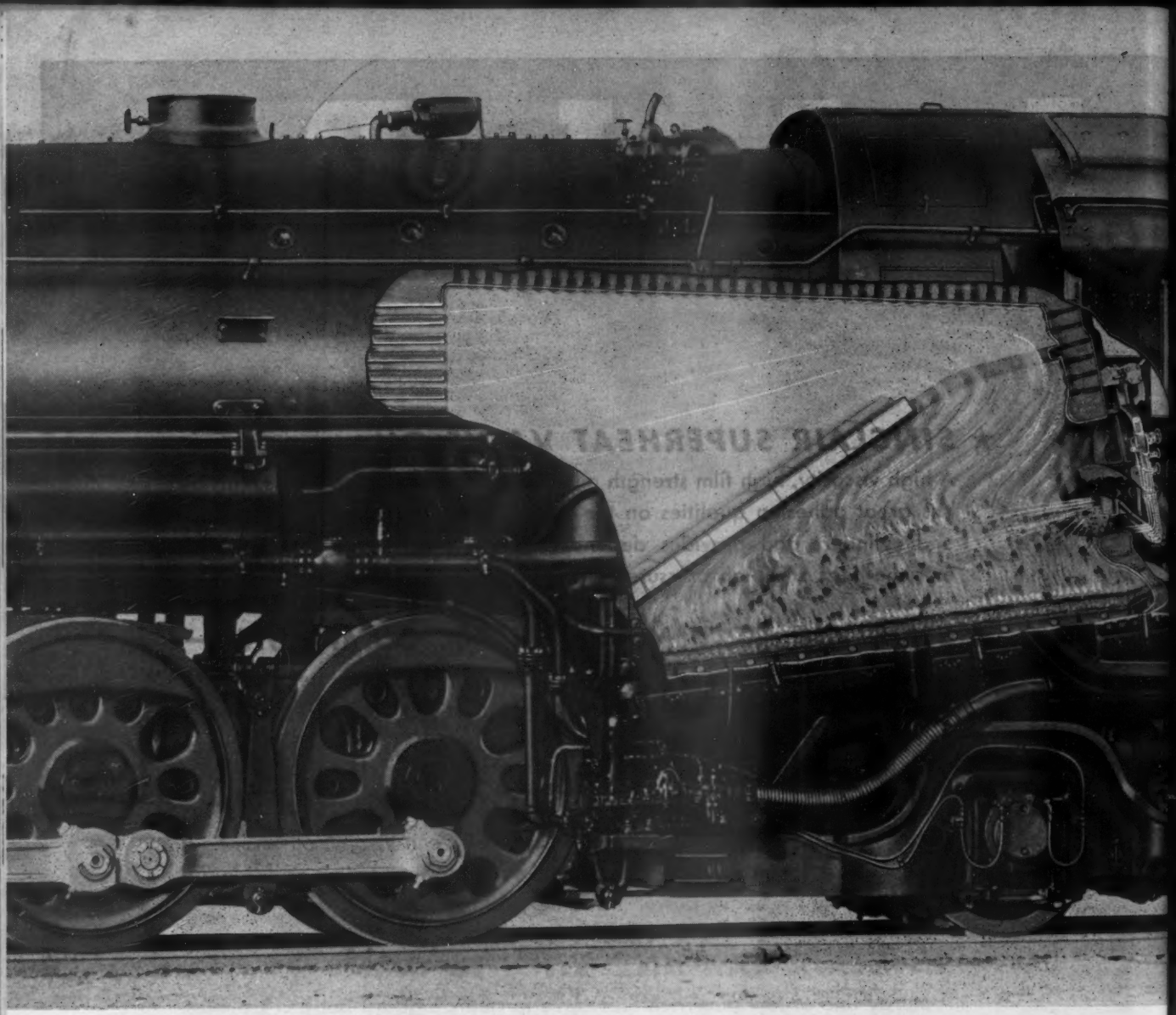
A sturdy line of low pour rich lubricants to guard against hot box troubles. These oils assure instant feed and high film strength under all operating conditions, to eliminate waste grab and scored bearing surfaces.

• • •

★ **SINCLAIR GASCON DIESEL OILS–**

These are straight mineral and compounded oils in various weights for Diesel locomotive service. Their inherent solvent action promotes clean engine operation and their wear-prevention qualities hold down expensive replacement and maintenance costs. High performance proved by use on 35 railroads.

SINCLAIR RAILROAD LUBRICANTS

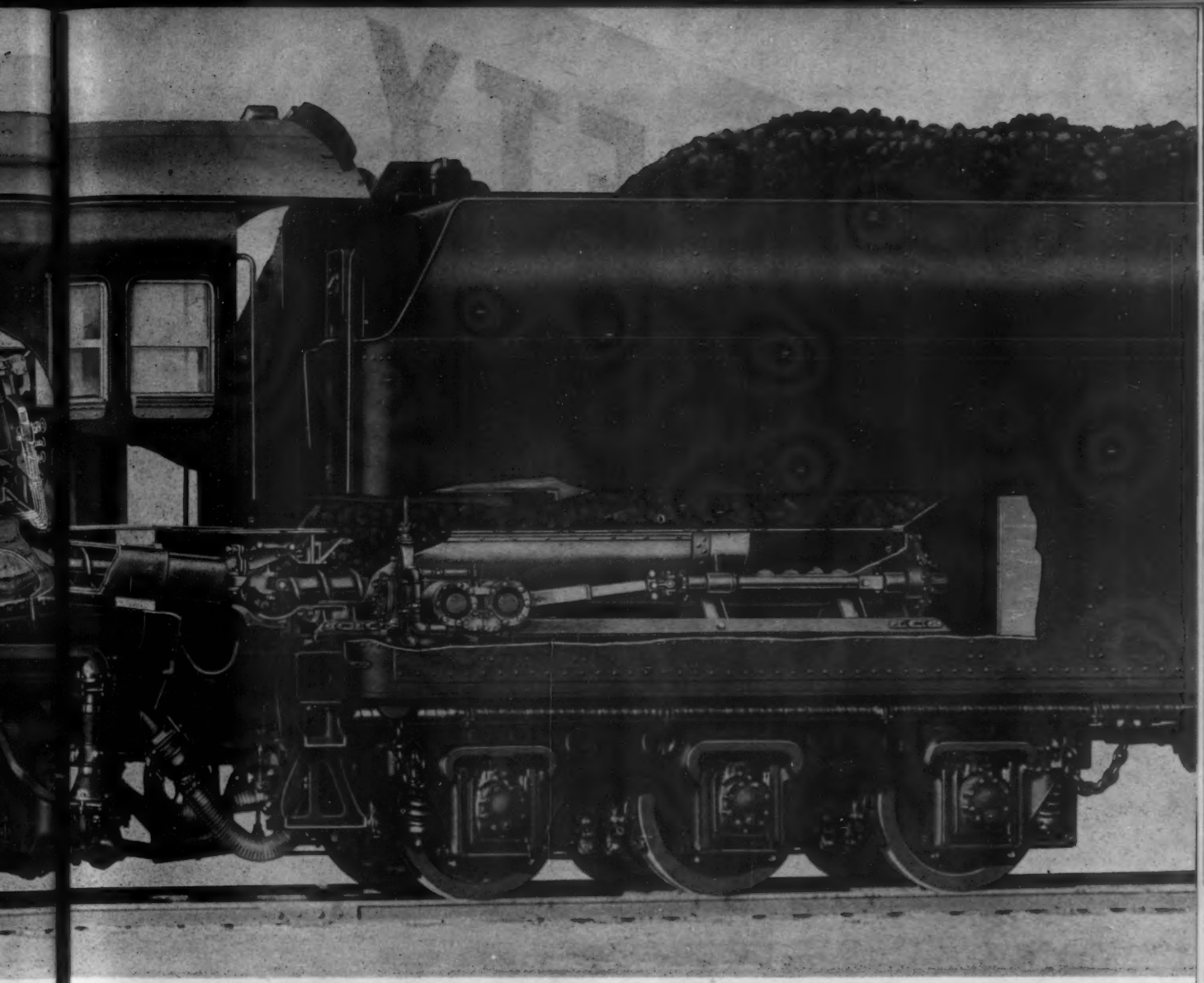


Luxury in the Coach . . .

A salute to the American Railroads for constantly improving their transportation facilities to give passengers the greatest degree of comfort and luxury even under the stress of wartime conditions . . . Tomorrow, the traveling public can expect even more luxurious accommodations . . . new types of services and higher speeds at no sacrifice of safety.







Economy in the Cab

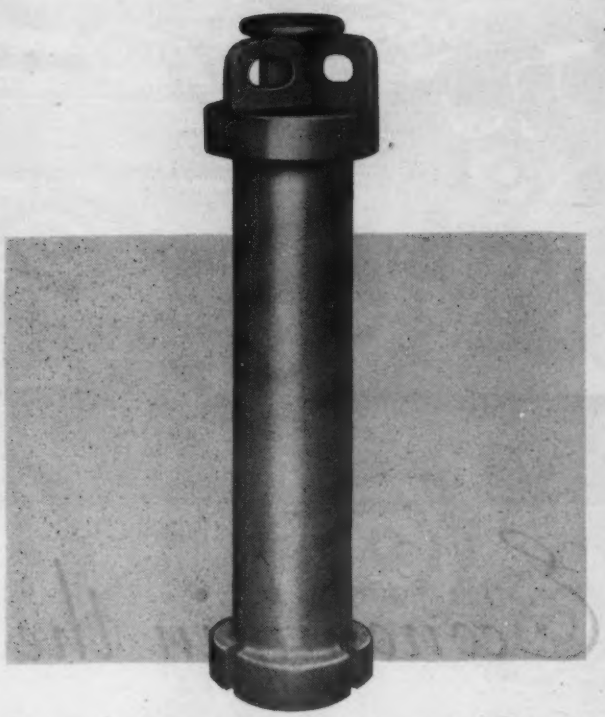
IN keeping pace with the trend for high speed operation, outstanding achievements have been made in improving the efficiency of the steam locomotive, thereby increasing the drawbar horsepower while decreasing fuel consumption. Toward this latter achievement Standard Stokers have made a significant contribution by mechanically firing locomotives successfully and economically, regardless of their size or combustion rate.

Illustrated above is a Standard HT Stoker "in action" firing a modern locomotive . . . it serves to demonstrate the method employed in moving coal from the locomotive tender to the point of distribution in the firebox.



THE STANDARD STOKER COMPANY, INC

NEW YORK • CHICAGO • ERIE • MONTREAL



MINER CLASS L-4 SAFETY LOCKING PIN securely locks the trucks to the body of the car. Keeping the trucks under the cars is known to prevent telescoping in the event of collision, and, should derailment occur, the lower center of gravity of the car with locked trucks materially lessens the danger of overturning. The L-4 Locking Pin is made of special heat-treated steel and is much stronger than previous designs.



MINER CLASS A-4-XB DRAFT GEAR is recommended for modern, light passenger cars and meets the demand for minimum weight without sacrificing capacity, smooth action, endurance or column strength. Vibration and surging at varying speeds of trains are prevented by the instantaneous reactivity of the initial spring movement throughout its range of capacity.



MINER CLASS B-18-X BUFFER in combination with the A-4-XB gear provides ample resilience for efficient and smooth operation of passenger trains. The high capacity of the buffer supplements the draft gear action in protecting long shank couplers and car structure when cars are subjected to extreme buffing stresses.



PASSENGERS EXPECT IT

THE EASE, quiet and pleasure of railroad travel on today's smoothly running streamliners has educated passengers to *expect* that kind of railway transportation. It's the kind of comfort that will keep them riding railroads... The silent and smooth rolling ride without jerk or jar that is made possible by Waughmat Twin Cushions. The public will be content with nothing less than Twin Cushion comfort on tomorrow's railroads.

WAUGH EQUIPMENT COMPANY, NEW YORK

Chicago • St. Louis • Canadian Waugh Equipment Company: Montreal

WAUGHMAT TWIN CUSHIONS
on these Streamline Trains

• • •

20th CENTURY LIMITED
New York Central

BROADWAY LIMITED
Pennsylvania

MISSOURI RIVER EAGLE
Missouri Pacific

TWIN CITIES "400"
Chicago & North Western

JAMES WHITCOMB RILEY
New York Central

CITY OF LOS ANGELES
C&NW—Union Pacific

CITY OF SAN FRANCISCO
C&NW—Union Pacific—Southern Pacific

EMPIRE STATE
New York Central

SILVER METEOR
Seaboard

MERCURY
New York Central

DELTA EAGLE
Missouri Pacific

COLORADO EAGLE
Missouri Pacific

LARK
Southern Pacific



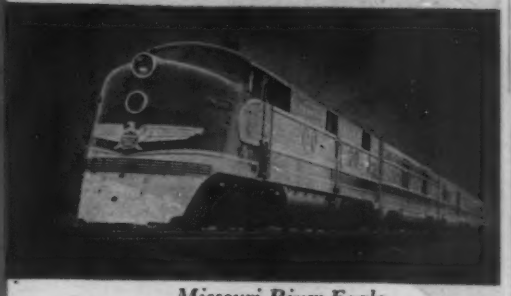
20th Century Limited
New York Central



Broadway Limited
Pennsylvania



City of San Francisco
C&NW—Union Pacific—Southern Pacific



Missouri River Eagle
Missouri Pacific

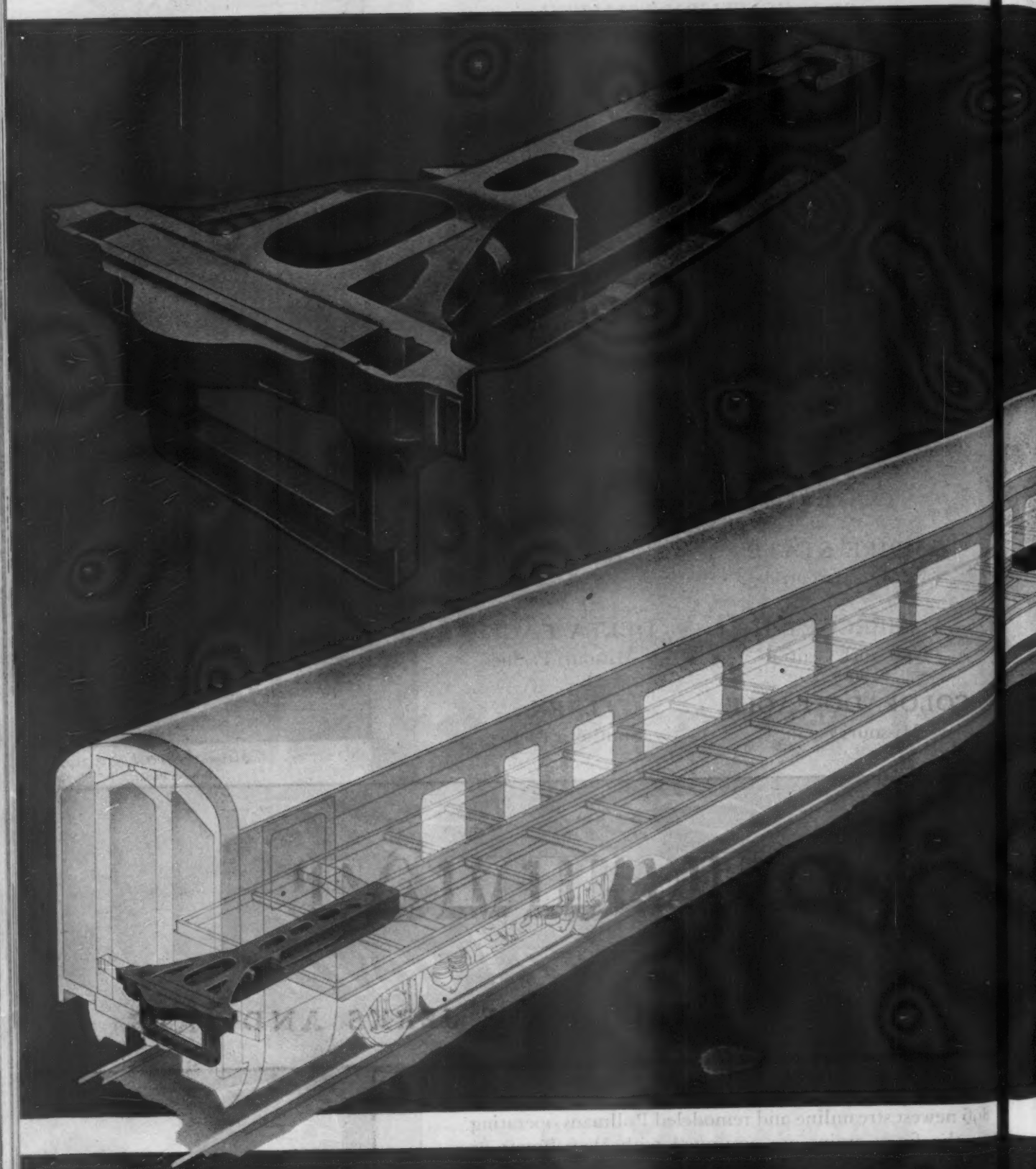
WAUGHMAT *Twin Cushions*
ELIMINATE JERKS AND JARS

896 newest streamline and remodeled Pullmans operating on the finest trains are equipped with Waughmats or Waughmat Twin Cushions.



Twin Cities "400"
Chicago & North Western

Your New Passenger



GENERAL STEEL

r Cars Will Be Better-Built, Stronger, Safer

with COMMONWEALTH One-Piece Platform Center Sill Castings



THE introduction of high-speed, modern, light weight passenger trains has necessitated important changes in the construction of passenger cars, both in design and materials, to insure adequate strength with less weight.

The COMMONWEALTH one-piece cast steel Platform Center Sill Casting, incorporated at each end of the car underframe as illustrated, provides the simplest, strongest, and best construction, minimizing damage to cars in collision. It meets all required safety standards and achieves *great strength without an increase in weight.*

COMMONWEALTH One-Piece Cast Steel Underframe End Castings are also provided with the body bolster cast integral and, if desired, can be arranged for Buffing Device.

L CASTINGS

EDDYSTONE, PA.
GRANITE CITY, ILL.

Two Kinds of "COVERAGE"



AO Safety Goggles are your insurance against expensive eye accidents. For unless you have adequate protection against every eye hazard in your plant, you're going to furnish an eye patch for an injured man sooner or later. The patch won't cost much in itself—but doctor's bills, lost production and spoilage can easily run the cost of one eye injury to well over $1,000.

For about 75c per eye—the average cost of AO Safety Goggles—you provide maximum eye protection for each skilled worker and you eliminate expensive eye accidents which run up production costs.

Call in an AO Safety Representative—and keep your "production eyes" producing.

American Optical
COMPANY
SOUTHBRIDGE, MASSACHUSETTS



And Simplicity itself...
The New Schaefer EVER-TITE Wear Plate



The new Schaefer EVER-TITE Wear Plate is easy to install in the side frame bracket. While in service, springs under compression hold it rigidly in place and save wear on the side frame bracket. Simplicity of construction and rugged design make the Schaefer EVER-TITE Wear Plate ideal for high speed freight service.

Schaefer Appliances

STANDARD ON MOST ROADS

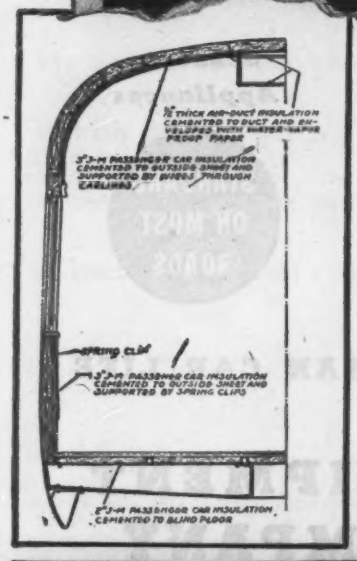
LIGHT WEIGHT DESIGN INSURES MORE THAN CAR LIFE

Schaefer EQUIPMENT COMPANY

KOPPERS BUILDING • PITTSBURGH, PA.

DROP-FORGED FOR LIGHT WEIGHT, HIGH STRENGTH, LONG LIFE AND SAFETY





Johns-Manville Stonefelt Insulation

BUILDING greater comfort into the Passenger Car of Tomorrow is more than a matter of soft chairs and fine appointments. It calls for the use of a highly efficient insulation in walls, ceiling and floors to resist the transmission of heat and sound.

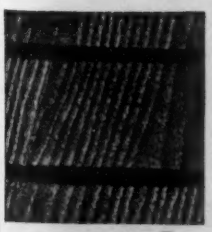
Johns-Manville Stonefelt is such a material. It is made of specially treated, extremely small diameter mineral fibers felted into a strong, resilient, lightweight blanket. The finished product has a high degree of sound-absorbing efficiency, low thermal conductivity, and, because of its mineral composition, is highly resistant to fire and moisture. And—an important consideration in passenger car service—Stonefelt maintains its rated thickness even under severe vibration.

In planning passenger car improvements for the days ahead, you will want full details about Stonefelt. Write Johns-Manville at New York, Chicago, Cleveland, St. Louis or San Francisco.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville





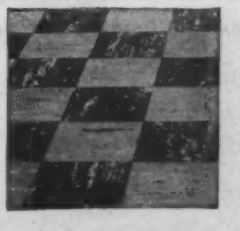
J-M Asbestos Roofing Shingles: Many passenger stations were roofed with these time-tested asbestos shingles 20, 25, 30 or more years ago. And, in most cases, not one cent has been spent for maintenance! Still offering the same low-cost protection against fire and weather, J-M Asbestos Shingles are available in many beautiful, blended colors to lend character and distinction to the Station of Tomorrow.



J-M Asbestos Flexboard: The Station of Tomorrow will have interior walls that are attractive and easy to maintain. Johns-Manville Asbestos Flexboard meets these requirements at surprisingly low first cost. This flexible asbestos-cement board comes in large sheets for quick, economical application. It cannot rot or burn—never needs painting. Its smooth, hard surface is easy to keep clean, highly resistant to abuse, stays good-looking indefinitely.



J-M Asbestos Siding Shingles: This siding material will enhance the exterior of any station—yet it requires little if any maintenance over the years! Asbestos Siding Shingles have the same enduring stone-like composition as Asbestos Roofing Shingles. Furnished in the Cedargrain texture shown and in colors especially developed for resistance to soot and smoke.



J-M Asphalt Tile: The ideal flooring material for the Station of Tomorrow! It is resilient, yet durable and long-lasting, and one of the simplest and most inexpensive of floors to maintain. And because J-M Asphalt Tile is laid in individual units and is available in a range of attractive colors, it offers the architect an almost limitless selection of attractive patterns from which to choose.

86 Years of Service to Transportation

INSULATIONS • FRICTION MATERIALS • PACKINGS • REFRACTORY CEMENTS • BUILDING MATERIALS

32 VOLTS, 64 VOLTS, or 110 VOLTS?



The modern lightweight streamlined car makes extensive use of electric power; the same will undoubtedly be true of the post-war car.

Will the post-war passenger cars have 32-volt, 64-volt, or 110-volt electrical systems? Whatever the choice, Edison Alkaline Batteries will provide standby power of highest dependability; 25-cell, 50-cell, and 88-cell batteries have been in successful use with all three systems for a number of years.

After a battery has delivered its normal service life on a 64-volt or 110-volt car, it can be regrouped into 25-cell batteries and these batteries applied to 32-volt baggage and express cars having loads for which their capacity is still adequate, thus giving additional years of dependable service.

A number of railroads get this "second life" from their Edison Alkaline Batteries. They could hardly afford to do it if they did not know that an alkaline battery remains a dependable power even after its normal service life has been completed. It's a feature of alkaline batteries that designers of post-war cars are invited to look into.

Edison Storage Battery Division of Thomas A. Edison, Inc., West Orange, New Jersey.



An alkaline battery in the battery compartment saves weight where it counts the most. It is suspended near the middle of the car where every pound saved may be as effective in reducing structural stresses as five pounds saved elsewhere. The larger the kilowatt-hour capacity, the greater is the weight that can be saved by the use of an alkaline battery.

Edison

THE LIGHTWEIGHT BATTERY

FOR LIGHTWEIGHT CARS

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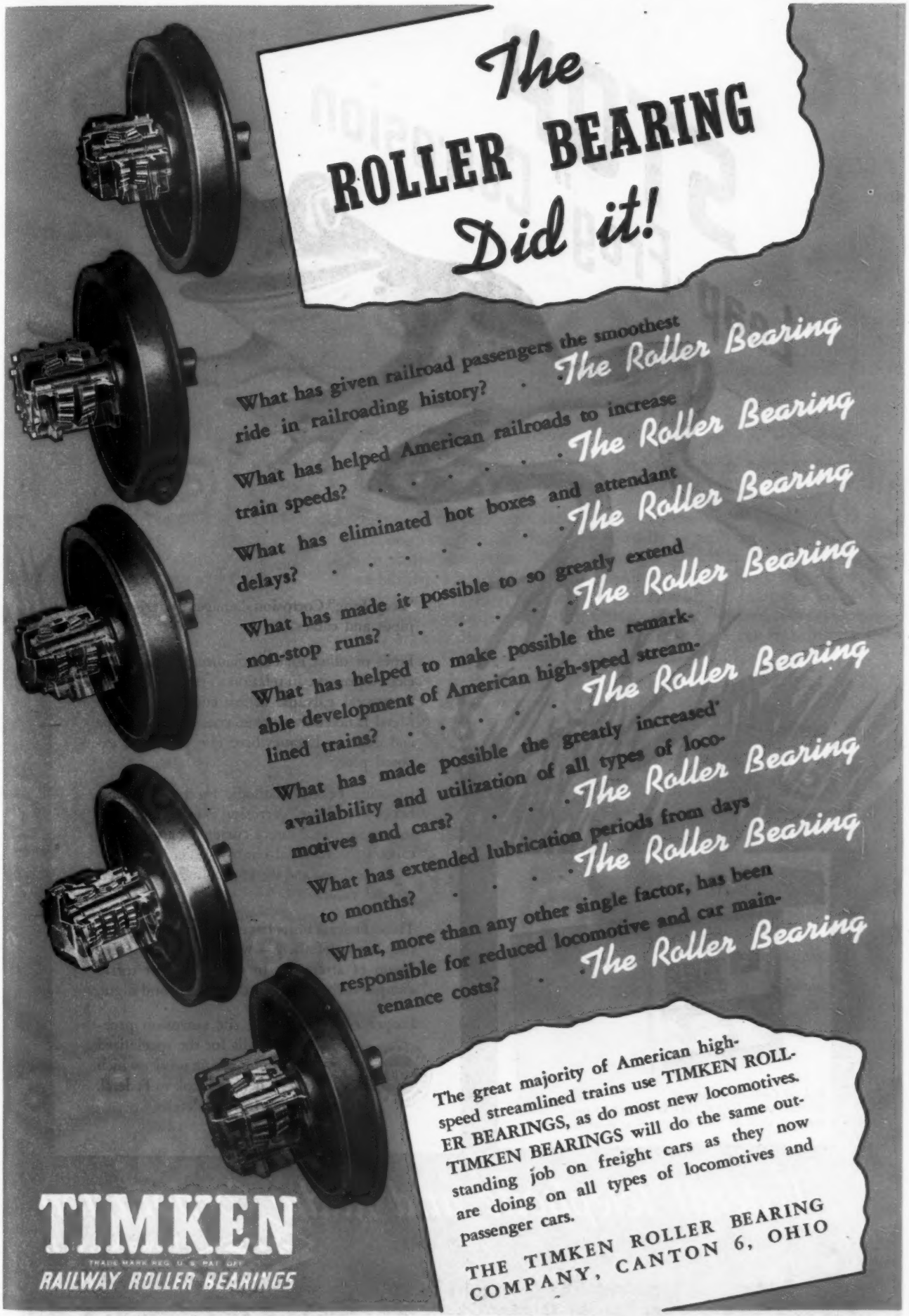
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RAILWAY AGE


The
ROLLER BEARING
Did it!
What has given railroad passengers the smoothest ride in railroading history? . . The Roller Bearing
What has helped American railroads to increase train speeds? . . . . . The Roller Bearing
What has eliminated hot boxes and attendant delays? . . . . . The Roller Bearing
What has made it possible to so greatly extend non-stop runs? . . . . . The Roller Bearing
What has helped to make possible the remarkable development of American high-speed streamlined trains? . . . . . The Roller Bearing
What has made possible the greatly increased availability and utilization of all types of locomotives and cars? . . . The Roller Bearing
What has extended lubrication periods from days to months? . . . . The Roller Bearing
What, more than any other single factor, has been responsible for reduced locomotive and car maintenance costs? . The Roller Bearing
The great majority of American high-speed streamlined trains use TIMKEN ROLLER BEARINGS, as do most new locomotives. TIMKEN BEARINGS will do the same outstanding job on freight cars as they now are doing on all types of locomotives and passenger cars.
THE TIMKEN ROLLER BEARING COMPANY, CANTON 6, OHIO
TIMKEN
TRADE MARK REG. U. S. PAT. OFF.
RAILWAY ROLLER BEARINGS

STOP "Leap-Frog" Corrosion





Federal Cathodic Protection Rectifier, Model FTR 5114-S. Output 20 amperes at 10 to 40 volts. Other sizes as required.

"Leap-Frog" Corrosion damages underground pipes and cables.

Pipes or other metal structures are in places electro-positive in relation to the soil and due to natural galvanic action corrosion results. Metal is taken away from one section of pipe and deposited somewhere else along the exposed pipe.

By using Federal Cathodic Protection Rectifiers, "Leap-Frog" corrosion is foiled. On constant guard is a direct current charge which cancels the harmful electrolytic corrosive action on oil, gas and water pipelines and underground cables.

These Federal units have no moving parts, so they last indefinitely — with the absolute minimum of attention. In desert heat or torrid dampness they keep on the job day and night.

Proper engineering for the corrosion problem at hand calls for the specialized consulting engineering service which is yours — when you look to Federal. Write today for full details.

Federal Telephone and Radio Corporation

AN IT&T ASSOCIATE

Newark 1, N. J.



Get years of dependable power with

RUGGED PHILCO BATTERIES

In Philco car lighting and air conditioning batteries you get the strong, rugged construction developed specifically to withstand constant vibration in railroad service. You get long life, and month-in, month-out dependability with Philco triple insulation and Philco flint-hard "K" process plates. You get maximum capacity with the famous Philco Floté grid design. There is a long-life Philco for all railroad battery needs—control, signal, diesel starting, electric truck and car lighting and air conditioning. Write for latest catalogs.

PHILCO CORPORATION, ***Storage Battery Division, Trenton 7, N. J.***



Specify

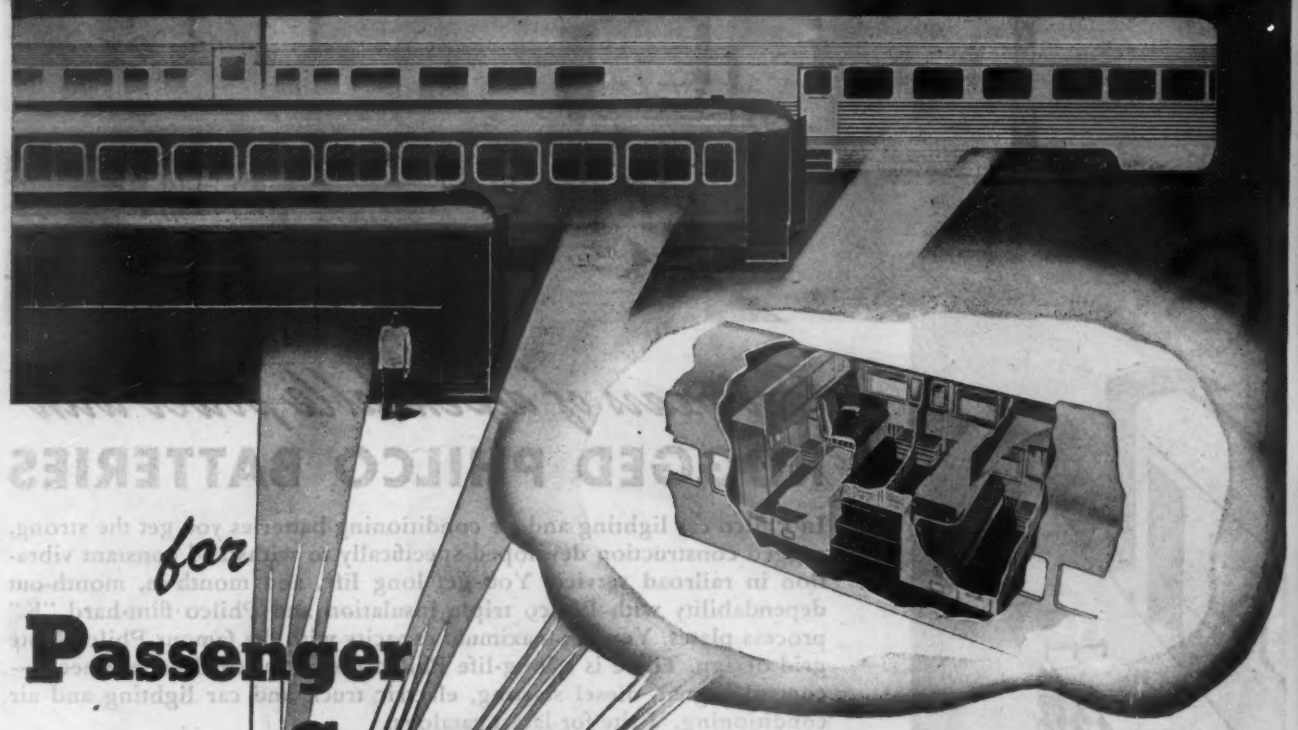
PHILCO BATTERIES

For 50 Years a Leader in Industrial Storage Battery Development



MAKERS OF THE FAMOUS PHILCO *Thirty*

FABREEKA



for

Passenger Comfort . . .

In your plans for insuring a profitable volume of passenger business after the war, an all-important factor is complete passenger comfort.

This depends on the reduction of noise and vibration. The use of FABREEKA in trucks and platforms of cars reduces noise and vibration to the maximum degree . . . Furthermore, — FABREEKA provides substantial economies in maintenance.

[FABREEKA *Pads, Washers, Bushings, Moulded Units and Fabreeka Units Fabricated with Steel.*]



FABREEKA PRODUCTS COMPANY, INCORPORATED

BOSTON 10, MASS.



Tested in Battle

In tanks, trucks, landing craft, planes, submarines, guns and many other applications FABREEKA has performed a useful and important service for our Armed Forces.

Used in RAILWAY PASSENGER CARS, Trucks and Platforms . . . LOCOMOTIVES, Steam and Diesel Electric . . . TRACK CONSTRUCTION, on Bridges, Crossings, Curves, Turntables and Track Scales.



it's Dearborn Treated...trouble-free!

The operating department on this railroad knows that delays due to bad water are practically unknown. The feedwater supply has been treated the Dearborn way. They are getting the trains over the road.

Dearborn water treatment and service eliminate locomotive tie-ups for boiler repairs caused by scale, corrosion, and foaming, with the result that locomotives on Dearborn-serviced railroads give straight-line performance through many water districts... with time out only for between-trip layovers and routine inspections.

The latest Dearborn water treatment formulas include anti-scale and a new Amine Anti-Foam. Both chemicals can be proportioned at wayside stations in the same tanks and pumped through existing equipment without changes or additions.

Dearborn engineers make a study of each water station, cooperating with the road's own chemists or serving independently. They advise on all water treatment problems. Formulas meet conditions at each water station, neutralizing scale-forming and foaming tendencies. There's a Dearborn engineer in your vicinity. Call him for complete details... today.

DEARBORN CHEMICAL COMPANY

310 S. Michigan Ave., Chicago 4 — 807-15 Mateo St., Los Angeles
205 E. 42nd St., New York — 2454 Dundas St., West, Toronto

Dearborn
TRADE MARK REGISTERED

BOILER WATER TREATMENT AND SERVICE

"Acres of Diamonds"*

The dramatic story of Passenger Progress . . . in which the railroads of America discovered unsuspected treasure in their own back yards.

* **"Acres of Diamonds" was the title of a famous lecture by the great Rev. Dr. Russell H. Conwell, pastor of the Baptist Temple in Philadelphia. He delivered this lecture more than two thousand times; on its proceeds founded the flourishing Temple University.**

WHERE THE DIAMONDS LAY

THE great middle class of America, prosperous, independent, travel-minded, were the diamonds of passenger profit discovered by the railroads in the last ten years.

At the beginning of the nineteen thirties, railroad passenger travel was at a low ebb. It had been declining steadily through the previous decade, even through a period of booming business.

The traffic was simply going elsewhere—to the highways, thronged with private cars and busses.

Then some far-seeing railroad men had the happy thought of making rail travel attractive to the millions who constitute the mass market. Although great numbers of usable coaches were still available, they embarked courageously upon a program of new and modern trains with luxurious equipment and fast schedules.

The results from 1934 until the beginning of the war exceeded their fondest expectations.



Budd

Where Profit Rides

IT WAS apparent from the beginning that profit rode in with the new trains. Passengers flocked to them. The experience of the Burlington with the Zephyrs was a striking example. The Pioneer Zephyr, first of the stainless steel streamliners built by the Edward G. Budd Manufacturing Company, was completed in 1934. The enthusiasm it aroused was so great, its success in attracting passengers so immediate, that other trains of the new type were ordered and quickly placed in service. By 1939 the Burlington's stainless fleet of Zephyrs included fourteen trains all Budd-built, serving all the principal cities on its lines. Both in numbers of passengers carried and in net passenger revenues, records were broken year after year as new trains were added.

It has been the experience of the Burlington and all other railroads operating stainless steel light-weight trains that a large proportion of the passengers filling them are newly-created traffic or recaptured from other means of transportation. Survey after survey by the railroads themselves has proved it.

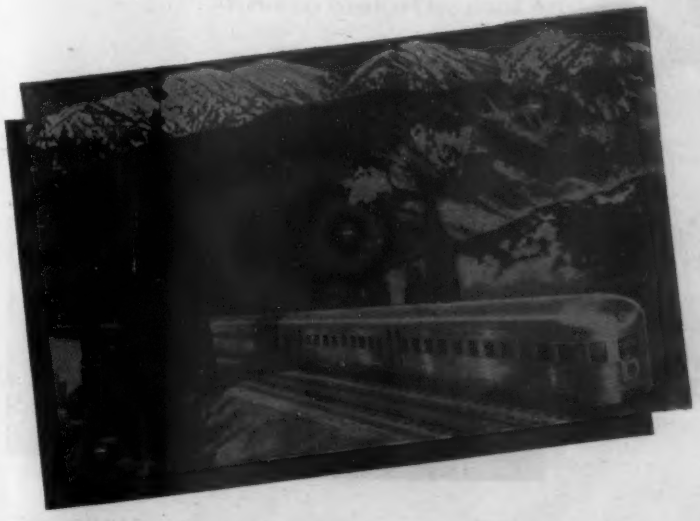


The ONE-CLASS Train

FIRST striking example of the one-class stainless steel streamliner designed for a long run was the now-famous El Capitan of the Santa Fe. There are two trains bearing this name, both built by Budd. Each makes a round trip weekly between Chicago and Los Angeles, a distance of 2,228 miles. The light weight of these trains permitted a scheduled running time of 39¾ hours, equal to that of the celebrated Super-Chief on the same line, which is also a Budd-built streamliner.

Specially designed for the two-nights and a day journey, El Capitan has luxurious reclining chairs, commodious retiring and lounge rooms, lunch-counter diner of large capacity and observation car. All passengers, paying the same fare for the same distance, have the use of the entire train.

Figures* tell the story. In the year ending June 30, 1941, the two El Capitans earned a gross revenue of $1,750,131, of which 72.4 per cent or $1,267,547 was carried to net before interest and depreciation. This far surpassed in both gross revenue and net percentage the return from the de luxe Super-Chief in the same period.



Passengers like the democracy of these trains, as well as the practical economy in travel —all seats are sold far in advance.

Budd

***From Coverdale & Colpitts Report on Streamline, Light-Weight, High-Speed Passenger Trains.**

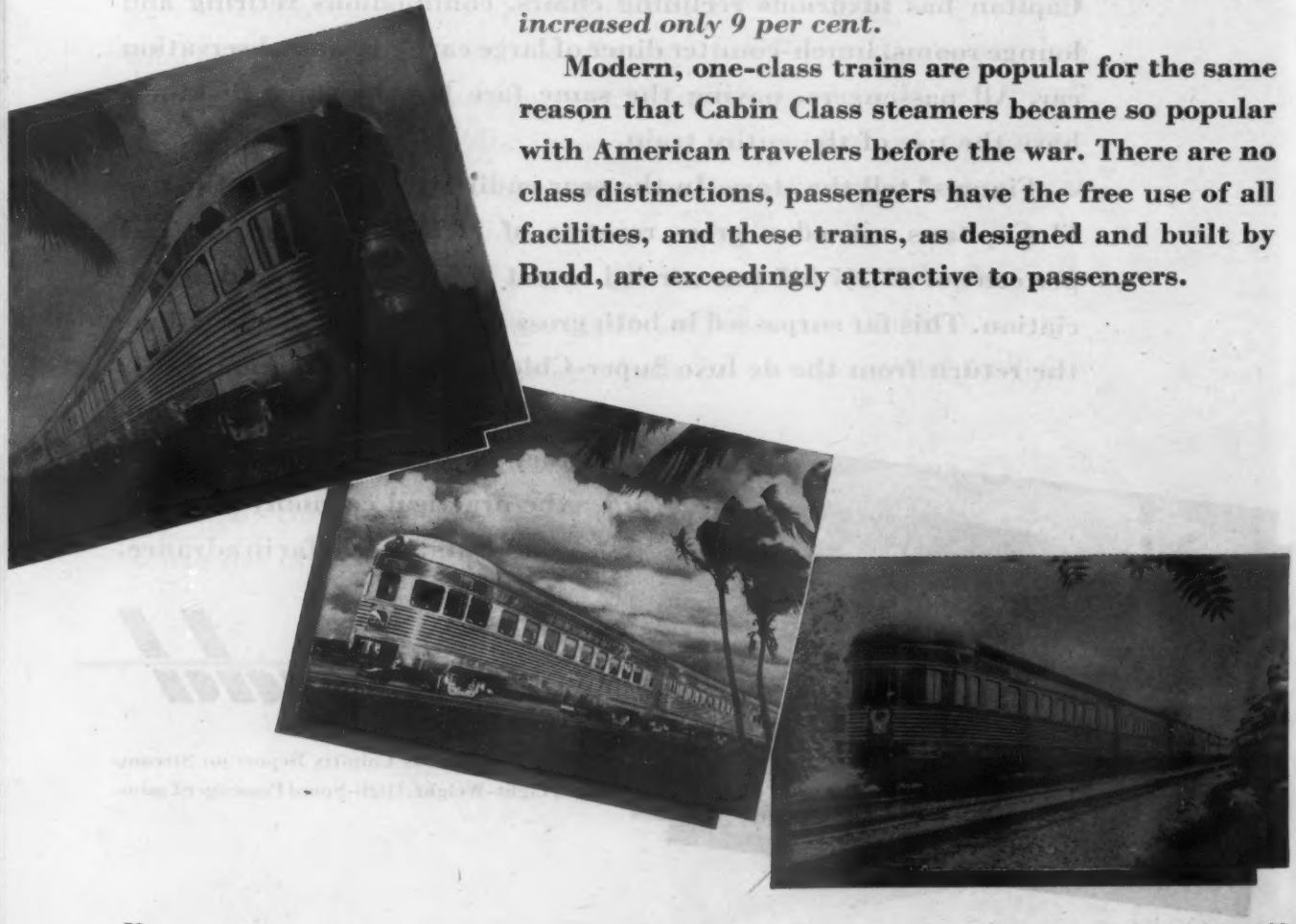
Travel to Florida

THE Santa Fe's gratifying experience with El Capitan was repeated by the Seaboard with its Silver Meteors and the Atlantic Coast Line with Champions from New York, and later by the Pennsylvania's South Wind and the Dixie Flagler operated by the C. & E. I. and Florida East Coast between Chicago and Miami.

These stainless steel, light-weight trains, all Budd-built, uncovered a tremendous demand for comfortable, fast, economical service between Florida and Northern cities.

Minimum fare travel to and from Florida increased 1200 percent during a period when sleeping car traffic increased only 9 per cent.

Modern, one-class trains are popular for the same reason that Cabin Class steamers became so popular with American travelers before the war. There are no class distinctions, passengers have the free use of all facilities, and these trains, as designed and built by Budd, are exceedingly attractive to passengers.



BUDD-originator

FOR more than ten years Budd has pioneered the idea of the modern, one-class train catering to the mass market which has proved so profitable to the railroads.

Although Budd has built and will continue to build luxurious sleeping cars of advanced design, dining and recreation cars and all other equipment requisite to complete modern passenger service, we believe that the vastly greater source of future profit to the railroads lies in the one-class minimum fare train.

In furtherance of this idea, Budd has been responsible for many innovations designed to make such travel attractive:

BUDD originated light-weight passenger car construction which made fast schedules possible and increased the number of passengers who could be transported with a given power unit.

BUDD was the first to use high-tensile alloy steel in railway car construction and the only builder to embody the strength and endurance of stainless steel in main car structures.

BUDD was the first to use the truss system of side framing and first to make the roof and flooring an integral part of the car structure.

BUDD was the first to give trains a modern appearance by design and use of fluted side panelling of unpainted stainless steel.



Budd

BUDD-Originator

TO MAKE trains more attractive to passengers, Budd instituted a program of study and research which is still continuing. Some of its results have been:

BUDD was the first car builder to employ a recognized architect and designers to create pleasing interiors and convenient arrangements for passengers.

BUDD originated the modern Sleeper Coach with reclining chairs to be a comfortable vehicle for long-distance travel. Budd innovations included:

Two-toilet washrooms for both men and women passengers. Multiple wash-stands, dental lavatories, shelves, electric razor outlets, roomy smoking compartments.

Decorative interiors and curtained windows in all cars.

Tinted glass to lessen glare from windows.

Double glazing in windows with shatter-proof inner glass in dust-proof, vibrationless frames.

Improved individual reclining chairs with leg rests and safety compartment for valuables.

Genuine air-conditioning and fluorescent lighting.

Budd was also the first to use shock absorbers on car trucks to improve riding smoothness and comfort.

Trains of the Future

THE program of sound engineering of railway passenger equipment begun by Budd in the early nineteen thirties is a progressive one. Each year saw advances.

Further improvements will be incorporated in trains to come; innovations will be introduced, but only after their merit has been clearly demonstrated.

This fact, however, should be clearly understood. The engineering principles which gave Budd leadership in railway passenger car building were fundamental ones. They considered both the hard facts of railroad operation and the waiting mass market for improved transportation. They proved that a very desirable thing could be done profitably—millions of new patrons were attracted and passenger traffic became a source of handsome revenue to the roads that went after it.

• • •

BUDD will continue to be guided by these principles; we shall adopt that which is new, not because it is new but only because it will render a genuine service to the public and earn profit for the railroads, our customers.

Budd

BUDD-COOPERATOR

WHEN Budd delivers a train, our interest in it is not finished. We want to see it filled with enthusiastic passengers and paying dividends to its owner.

This has been the Budd idea since the beginning. Not only to build modern trains but to stir the public imagination and promote travel in them. Budd's own advertising has been devoted chiefly to arousing interest in trains actually running on the rails; not to exploiting gadgets which may or may not be used in the future.

Operating on this solid foundation, Budd has extended liberal cooperation in the introduction of new trains and continued publicizing them. The value of this policy to the railroads has been generously acknowledged. New trains were sold to capacity before they were put in service. Many stainless steel trains paid for themselves out of net profits within two years. And this was before the tide of travel was stimulated by war preparations.

Budd believes that Passenger Progress has seen only its beginning. New chapters will be written. Love of travel is ingrained in the American spirit and only the railroads can carry the vast numbers of passengers with speed, comfort and safety.

EDWARD G. BUDD MANUFACTURING COMPANY Budd

PHILADELPHIA **DETROIT**

NEW YORK • CHICAGO • ST. LOUIS • WASHINGTON • SAN FRANCISCO



Bridge structures like this, and many other types equally modern, will be needed to carry the giant, fast trains in the peacetime era. American Bridge Company stands supreme in its capacity to fabricate and erect them or any other needed railroad structure, from turntables to buildings.

A glimpse into the future while your eyes are on the present

NEVER in their history have America's railroads faced a test to match that of this war emergency. Never have they more completely demonstrated their ability to accomplish the seemingly impossible.

The entire operation has been precedent-breaking. Troops, civilians, raw materials and finished products have been moved in numbers and volume with incredible speed and dispatch.

The job is by no means through. It must continue as long as war lasts despite increasing wear and tear on equipment and serious shortages in man power. The utmost is still asked and the carriers have proved that they can and will give it.

Every railroad man knows what high speeds, great loads and ceaselessly pounding traffic does to equipment, roadbeds and structures. That these have stood up and will continue to do so is a monument to foresight, unceasing vigilance and well engineered upkeep and repairs.

But no railroad man, either, doubts for a moment that the future calls for great planning. One glimpse is all that is needed to see that a vast rehabilitation program is inevitable. America, alert to wartime achievements, will demand in peacetime competition a continuance of exceptional service with even greater assurance of speed, comfort and safety. This means changes and improvements in everything from roadbeds to equipment. It means old structures modernized and strengthened, new and better ones built. It means profiting by technological advances in materials and equipment.

When that welcome time arrives, and it may not be long in coming, we, too, will be able to put aside our war job and take on the tasks of peace. Then you will find American Bridge Company better able than ever to help you; ready with unsurpassed facilities, with greater-than-ever resources and experience, to tackle your every structural problem.

AMERICAN BRIDGE COMPANY

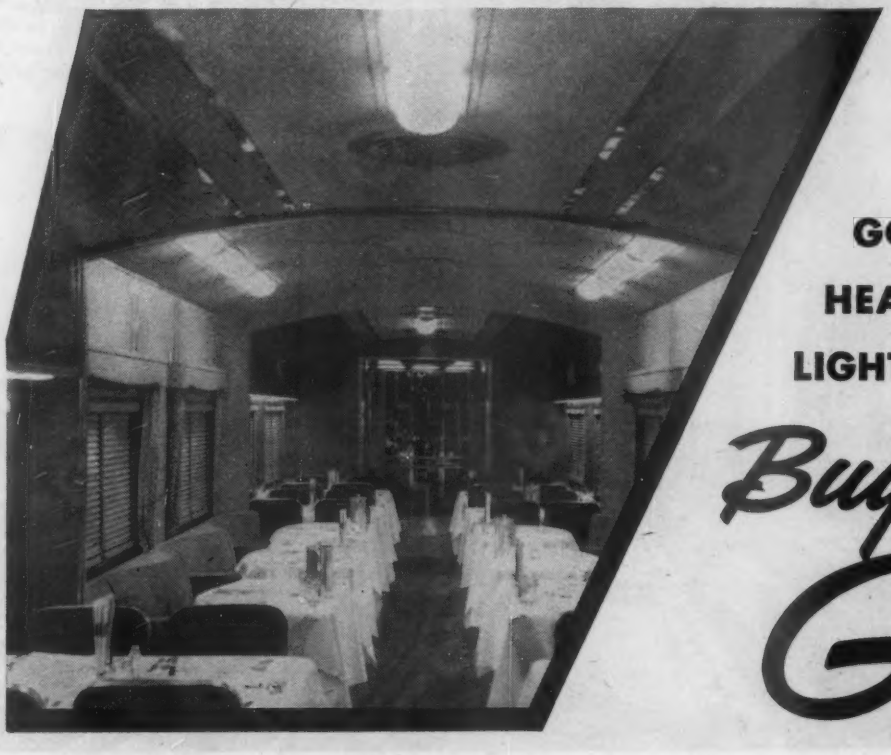
General Offices: Frick Building, Pittsburgh, Pa.

District Offices in: Baltimore · Boston · Chicago · Cincinnati · Cleveland · Denver · Detroit
Duluth · Minneapolis · New York · Philadelphia · St. Louis

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* — United States Steel Export Company, New York

UNITED STATES STEEL

G-E lamps can provide cheerful light for eye comfort... create attractive surroundings in postwar dining cars. Plan now! "Empire State Express", New York Central System.



GOOD LAMPS ARE THE HEART OF ANY GOOD LIGHTING INSTALLATION

Buy G-E!

Here's News! G-E MAZDA Fluorescent lamps now available for everyone!

YES... *now* you can buy as many G-E Mazda fluorescent lamps as you need to replace blackened and burned out lamps. Today, your lighting can be brought to peak performance with new, low-cost, long-lasting G-E Mazda fluorescent lamps. When you make replacements, look for the G-E monogram. Remember... it is the constant aim of General Electric research to make lamps bearing this mark ...

Stay Brighter Longer



G-E MAZDA LAMPS

GENERAL ELECTRIC

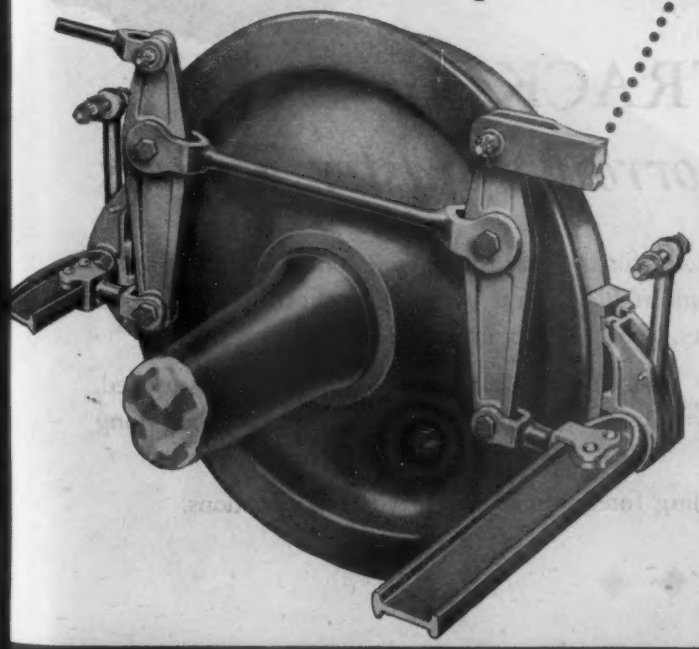
Hear the G-E radio programs: "The G-E All-Girl Orchestra", Sunday 10 p. m. EWT, NBC; "The World Today" news, every weekday 6:45 p. m. EWT, CBS.

BUY MORE WAR BONDS



In six months: 47 Billion Passenger Miles

and A.S.F. CLASP BRAKES and SPRINGS have helped break a record



For the first six months of 1944, passenger traffic was higher than for any comparable period in American railroading history. It climbed to the gigantic total of 47,036,512,000 passenger-miles, an increase of almost 20 per cent over what was considered a staggering load in the first six months of 1943.

A. S. F. Simplex Unit-Cylinder Clasp Brakes have helped maintain the schedules that made this record possible by effecting quick, time-saving stops with safety and comfort to passengers. And the safety and comfort of a smooth, fast ride has also been due, in part, to the dependable performance of A. S. F. Full-Elliptic and Coil Springs.

AMERICAN STEEL FOUNDRIES

CHICAGO



International Ties - -
SAFER TRACK for
Tomorrow's Faster Trains

HUNDRED-MILE-AN-HOUR trains, predicted for the near future, will come only if the track structure makes super speeds safe and comfortable. Men planning such track must give serious thought to the ties, for without good ties, good track is impossible.

International ties are accurately and uniformly cut to full A.R.E.A. dimensions, properly seasoned, and adequately treated with the correct preservatives. Their resistance to decay, and their long life saves on track-maintenance costs.

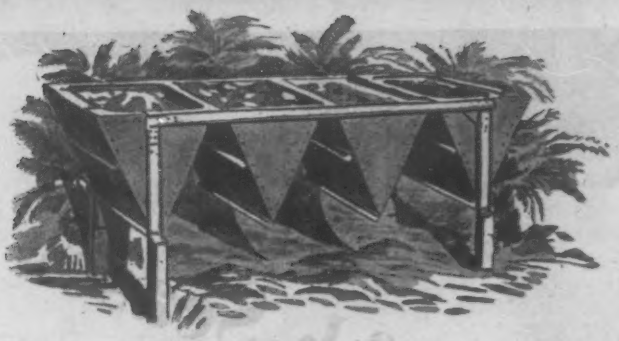
Plan now for tomorrow's safer track by including International ties in your specifications.

◆ ◆ ◆

INTERNATIONAL CREOSOTING & CONSTRUCTION CO.

PRODUCERS OF HIGH GRADE TREATED TIES, POLES, PILES, ETC.

Galveston — Beaumont — Texarkana

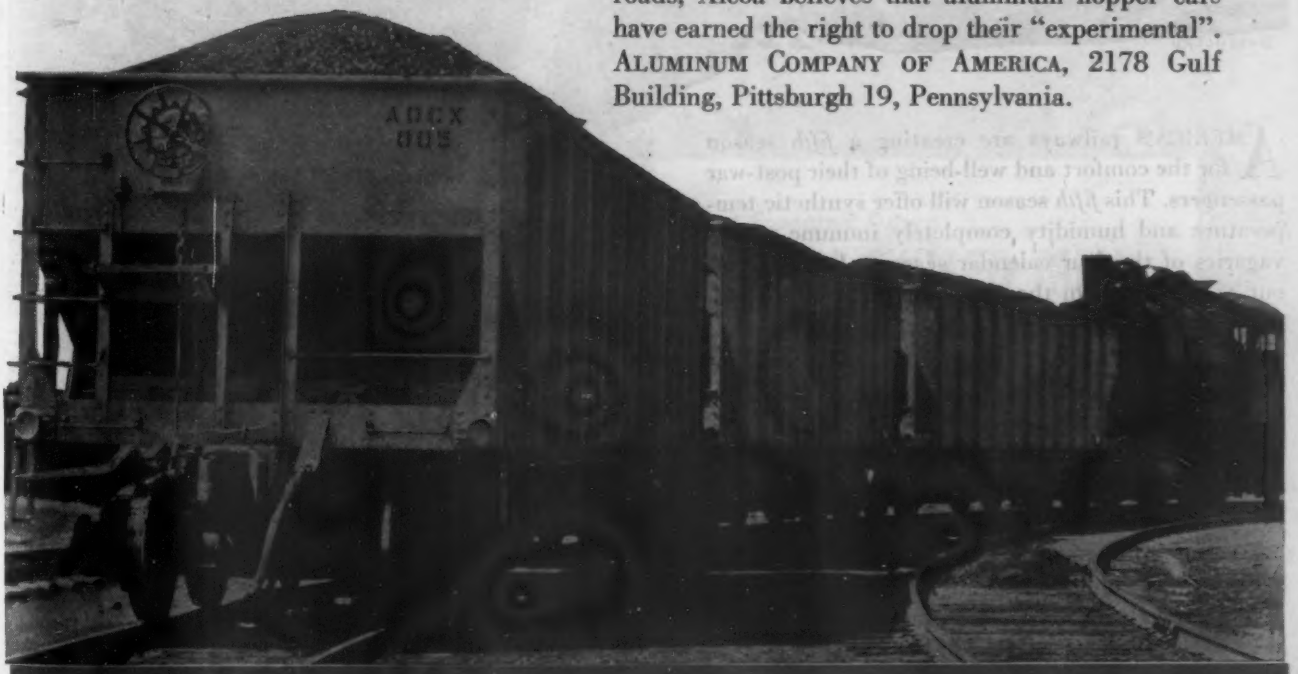


Here's why Aluminum Hopper Cars have dropped their "experimental"

As early as 1931, aluminum hopper cars classed as "experimental" were riding the rails. These cars have actually run as many miles in 12 years as the average hopper does in 30 years, thereby demonstrating that they could take the punishment meted out to regular rolling stock.

All this time, too—for over twelve years—the aluminum test hoppers you see above have been similarly proving the endurability of aluminum. Three of them were exposed to the severely corrosive influences of high sulfur bituminous coal. The fourth was left empty as a control. Every second year this coal has been replaced to keep its bite bad. And this test goes on.

The behavior of the hoppers and the mileage run by these aluminum hopper cars *indicate a full thirty years of service life* without replacement because of destruction by the lading. Like the railroads, Alcoa believes that aluminum hopper cars have earned the right to drop their "experimental". ALUMINUM COMPANY OF AMERICA, 2178 Gulf Building, Pittsburgh 19, Pennsylvania.



ALCOA ALUMINUM



AMERICA'S railways are creating a *fifth* season for the comfort and well-being of their post-war passengers. This *fifth* season will offer synthetic temperature and humidity completely immune to the vagaries of the four calendar seasons. It will stand out as a triumph in the science of air conditioning.

This new season will be made possible in part by the V-Belts developed in the laboratories of Dayton Rubber. These belts, already in production, have the toughness, durability and gripping qualities to provide the smooth, unvarying transmission of power required by the railways' program for Air Conditioning, Car Lighting and Diesel Locomotive operation.

Dayton Rubber—for 37 years a leader in natural and synthetic rubber processing, and the only rubber manufacturer with a special railway division—is ever alert to the needs and desires of the railroads.

THE DAYTON RUBBER MFG. COMPANY
DAYTON 1, OHIO

Pioneers of Railway V-Belts and Connectors
The World's Largest Manufacturers of V-Belts

Dayton Two-inch "D-R" V-Belt Drive



V-Belts by Dayton Rubber

The Mark of Technical Excellence in Synthetic Rubber

★ LET'S ALL BACK THE ATTACK WITH WAR BONDS ★



For Our Secure Economic Future

GIVE AMERICA HIGHLY SKILLED MEN

Can America meet the ruthless economic challenge of a war-exhausted world?—*indeed she can!*

How?—by creating a nation of highly skilled workers unmatched throughout the world! By teaching to unskilled men the skills that will lift them to better, richer living! By recognizing that ***unskilled labor adds nothing to a product except cost***—and by insuring lowest cost through planned, engineered, mechanized materials handling.

Clark Tructractor is conducting an exhaustive inquiry into the materials handling requirements of post-war industry—in order to design better equipment to meet those requirements. You are invited to participate in that study by sending for a questionnaire concerning the post-war materials handling needs of your business.

CLARK TRUCTRACTOR DIVISION, Battle Creek, Michigan.

TURN PAGE FOR MORE DATA →

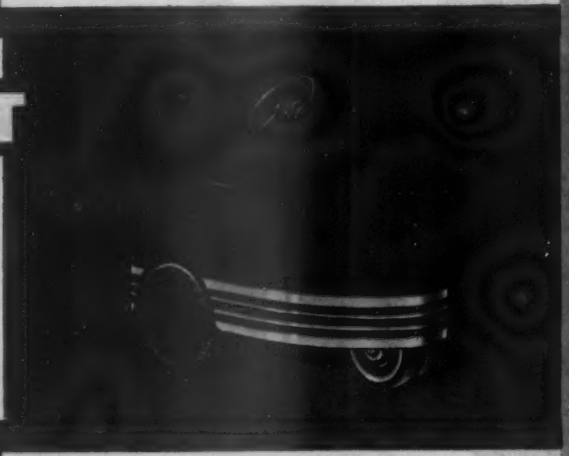


FORK TRUCK

Fast, sturdy, easy to maneuver in close quarters, Clark Fork Trucks are on the job 24 hours of every day—lifting, moving, tiering, stacking loads of 1000 to 7000 pounds.

CLARKAT

Through busy aisles, and from docks and warehouses, these husky Clarkats haul trailer trains carrying loads 20 times their own weight. Twin front wheels assure stability. Gas powered.





CLARKTOR-6

At railway terminals and airports, across factory yards, the "Clarktor-6" is ideal equipment—hauling heavily loaded trailers. This all purpose heavy duty tractor with its six-cylinder engine, has a remarkable performance record.

Electric FORK TRUCK

Here is another consistent worker—Clark Fork Truck **electric powered**. Compact and rugged, with smooth, even power, it handles loads from 1000 to 7000 pounds, saving vital man-hours and money. A better unit at a lower price.



Another PRODUCT of CLARK EQUIPMENT COMPANY

A GUARANTEE OF USEFULNESS

For nearly three decades users of Clark Fork Trucks and Industrial Tractors have been getting the sturdy usefulness and low-cost performance which the name Clark instantly guarantees. Clark engineers are at your service for study of your materials handling problems.

CLARK TRUCTRACTOR

Division of CLARK EQUIPMENT COMPANY • BATTLE CREEK, MICHIGAN
Also BUCHANAN . . . JACKSON . . . BERRIEN SPRINGS, MICH.

Some CLARK *products*



TRANSMISSIONS



BLIND RIVETING PROCES



AXLE HOUSINGS



FRONT AND REAR AXL FOR TRUCKS AND BUSS



DRILLS AND REAMER



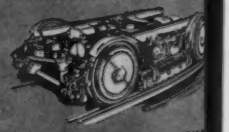
GEARS AND FORGING



ELECTRIC STEEL CASTING



INDUSTRIAL TRUCKS AND TRACTORS

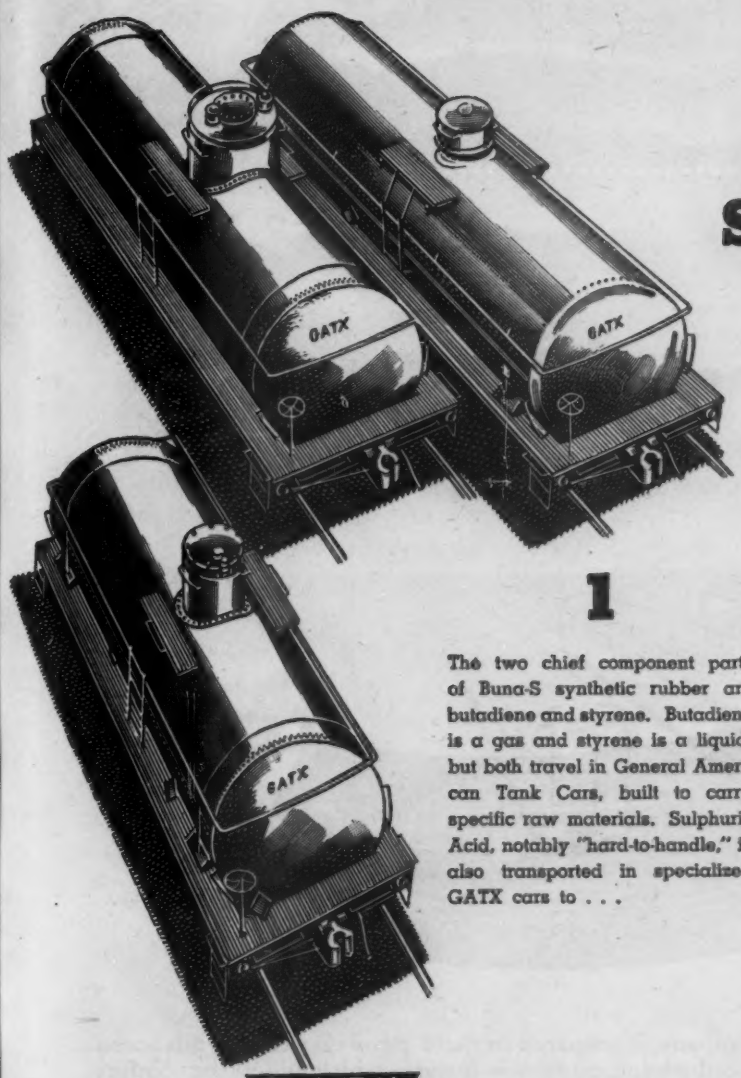


RAILWAY CAR TRUCKS



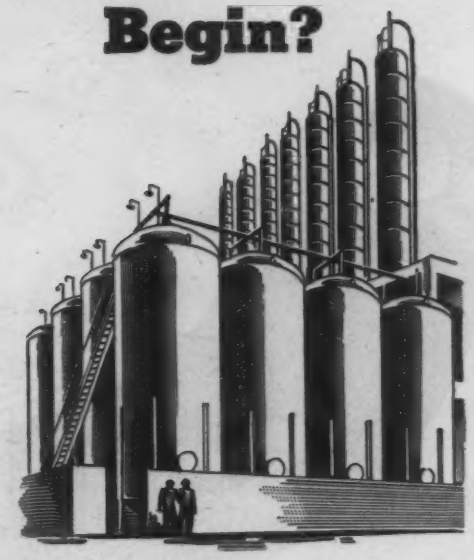
METAL SPOKE WHEEL

How Does Synthetic Rubber Begin?



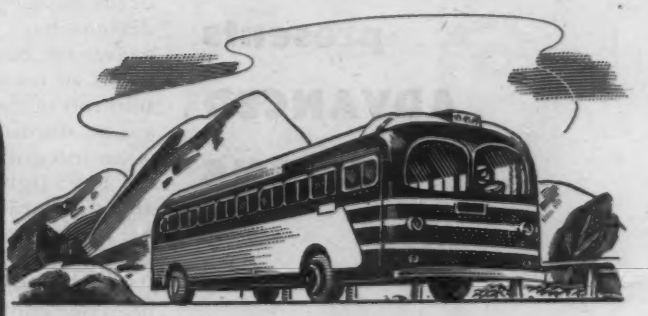
1

The two chief component parts of Buna-S synthetic rubber are butadiene and styrene. Butadiene is a gas and styrene is a liquid, but both travel in General American Tank Cars, built to carry specific raw materials. Sulphuric Acid, notably "hard-to-handle," is also transported in specialized GATX cars to . . .



2

the synthetic rubber plant. General American Plate and Welding equipment is used here, as well as in the manufacture of synthetic rubber products, such as . . .



3

synthetic rubber tires, which may one day be used on another General American product—streamlined Aerocoach busses.

One of a series of advertisements designed to show General American's contribution to everyday living and our part in the efficiency of American Industry during war and peace.

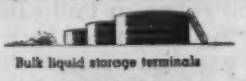
GATX
GENERAL AMERICAN

GENERAL AMERICAN TRANSPORTATION CORPORATION

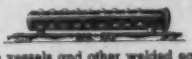
Chicago



Builders and operators of specialized railroad freight cars



Bulk liquid storage terminals



Pressure vessels and other welded equipment



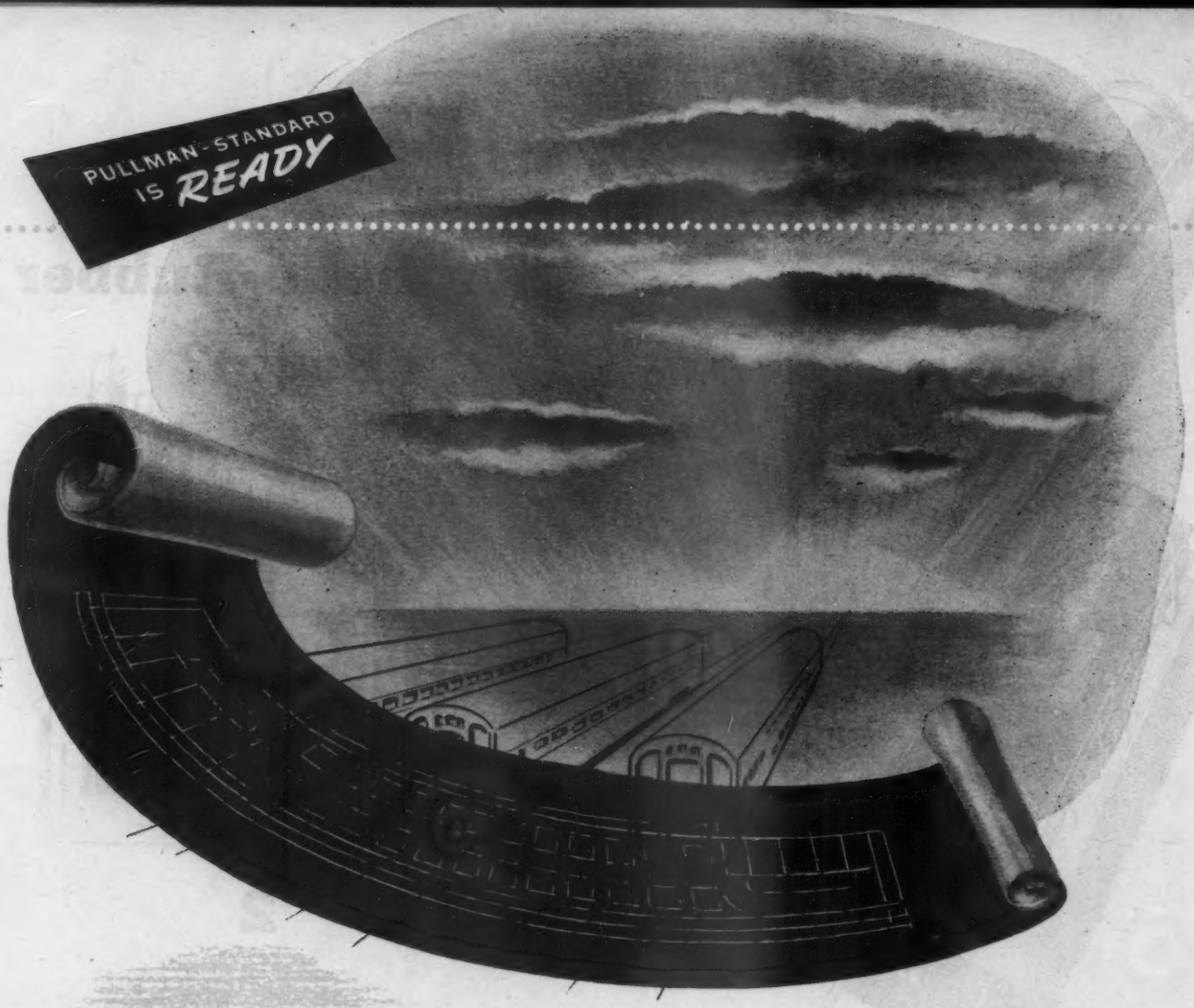
Aerocoach motor coaches



Process equipment of all kinds



Precooling service for fruits and vegetables



Pullman-Standard presents ADVANCED DESIGNS

This company is prepared to build passenger cars of advanced design embodying many new features which add to the comfort of the passenger and the attractiveness of rail travel. These new designs have been created to help the railroads increase their passenger business in the face of keen competition from other forms of transportation. They also will contribute toward the solution of the post-war employment problem.

The sturdiness of *Pullman-Standard* design and construction is an integral part of all of these new conceptions. Not one of the 1505 light weight cars built by this company has developed any structural weakness requiring reinforcement or rebuilding. All of our designs are thoroughly engineered before being offered to our customers.

Safety, comfort, convenience, attractiveness and economy have been our guides in all of our research work. We are always looking ahead for anything that the future might add to any of these characteristics.

In *Pullman-Standard's* exhibit rooms at Pullman Car Works, forward-looking railroad men by the hundred have viewed with approval numerous plans for passenger cars of different types . . . designs ready to be turned into realities.

BUY ★ WAR ★ BONDS

Pullman-

CHICAGO • NEW YORK

Pullman-Standard presents

THE *Day-Nite* COACH



This popular type of equipment finds its latest expression in the Day-Nite coach by *Pullman*... where emphasis is placed on comfort . . . where seating and reclining facilities effect complete relaxation.

The seats are spaced for comfort and the leg rests allow one to recline comfortably . . . to relax at full length, eliminating fatigue.

Drapes used at the windows during the day, are swung out at right angles at night to give a sense of privacy to each section.

Individual lights are focused for each seat . . . each passenger may read without his light disturbing his neighbor.

There are three complete and private dressing rooms at each end of the car and an inconspicuous approach to these facilities is formed by a curtained foyer.

A novel arrangement has been devised for the storage of unneeded baggage to relieve overcrowded baggage racks and cluttered aisles.

The Day-Nite coach will meet the demand for economy and comfort during the coming highly competitive era.





PULLMAN-STANDARD IS *READY*

Standard CAR MANUFACTURING COMPANY

CLEVELAND • WASHINGTON, D. C. • PITTSBURGH • BALTIMORE • BIRMINGHAM • WORCESTER, MASS.

San Francisco Sales Representative, Mark Noble

Pullman-Standard presents

A NOVEL *Dining* CAR



The keynote of this new diner by *Pullman* is a table and seating arrangement which provides more comfort and privacy, gives roomy passage through the car and permits swift, unobtrusive, convenient service with greater efficiency . . . all in keeping with the fine meals which the traveler will expect on our peace-time railroads.

The three-cornered compartments along the side wall can be used for storing linen and the tops will serve to hold sugar bowls, water bottles, and other tableware.

This dining car offers the spaciousness and decorative effects of a smart restaurant and the railroad representatives who have seen the plans have given them their enthusiastic approval.





PATENT APPLIED FOR

PULLMAN-STANDARD IS *READY*

Pullman-

CHICAGO • NEW YORK

Pullman-Standard presents

A *Threedex* SUBURBAN COACH

PULLMAN-STANDARD IS READY



PATENT APPLIED FOR





Here is an entirely new conception of a suburban coach by *Pullman* . . . a design that comfortably seats 112 passengers on three levels or decks.

Passengers enter on the middle level at each end. Here are located accommodations for card players . . . four semi-private sections . . . the answer to many a commuter's prayer.

From this point steps descend to the lower level side-facing seats and ascend to the upper level forward-facing seats.

Ample toilet facilities are located at each end of the car. The coach may be air conditioned if desired.

The "Threedex" coach offers increased comfort to passengers and increased earnings to the railroads. It is one of many innovations that *Pullman* has developed to meet the competitive requirements of the post-war period.

Standard CAR MANUFACTURING COMPANY

CLEVELAND • WASHINGTON, D. C. • PITTSBURGH • BALTIMORE • BIRMINGHAM • WORCESTER, MASS.

San Francisco Sales Representative, Mark Noble

MR. JOHN E. McCARTHY, Pres.
Fifth Avenue Coach Company...

Mr. McCarthy has said, "It has always been the aim of the Fifth Avenue Coach Company to keep abreast —yes, and even ahead—of progressive automobile design and the development of features that mean comfort, convenience and expedition for its passengers. In keeping with our policy, we feel that...



"FLUORESCENT LIGHTING HAS TREMENDOUS POSSIBILITIES IN THE TRANSIT FIELD"

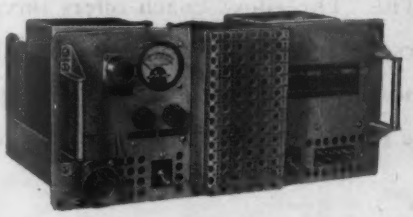
Mr. McCarthy, fluorescent lighting is a *must* for the transit field. Actual tests have shown that passengers prefer the better light distribution, added comfort and attractive appearance of fluorescent lighting. It is a superior type of lighting with no increase in battery drain.

Here at Electronic Laboratories, four different types of current converting systems have been developed to make possible fluorescent lighting for all transit vehicles regardless of the voltage available. Working with competent fixture manufacturers, E-L engineers can provide a complete fluorescent lighting system that will mean more passenger traffic for buses, trackless trolleys, street cars, subways and railroad cars.

Electronic Laboratories are pioneers in the vibrator conversion of current to meet specific requirements in voltage, frequency or type. Efficient, versatile and dependable, Vibrator Power Supplies have been proved on battlefronts all over the world . . . E-L engineers welcome consultation on your fluorescent lighting or power supply problems.

STANDARD POWER SUPPLY MODEL 1543

This Vibrator Power Supply is a typical E-L unit for parallel operation of fluorescent lamps. Model 1543 has an input of 24 volts DC and operates sixteen 30-watt fluorescent lamps. 32-volt model also available.



ARMY NAVY

Electronic LABORATORIES INC.

VIBRATOR POWER SUPPLIES FOR LIGHTING, COMMUNICATIONS, AND ELECTRIC MOTOR OPERATION • ELECTRIC, ELECTRONIC AND OTHER EQUIPMENT

Passenger Comfort



COACH & CAR

builder exclusively of railroad seats

. . . simple in construction

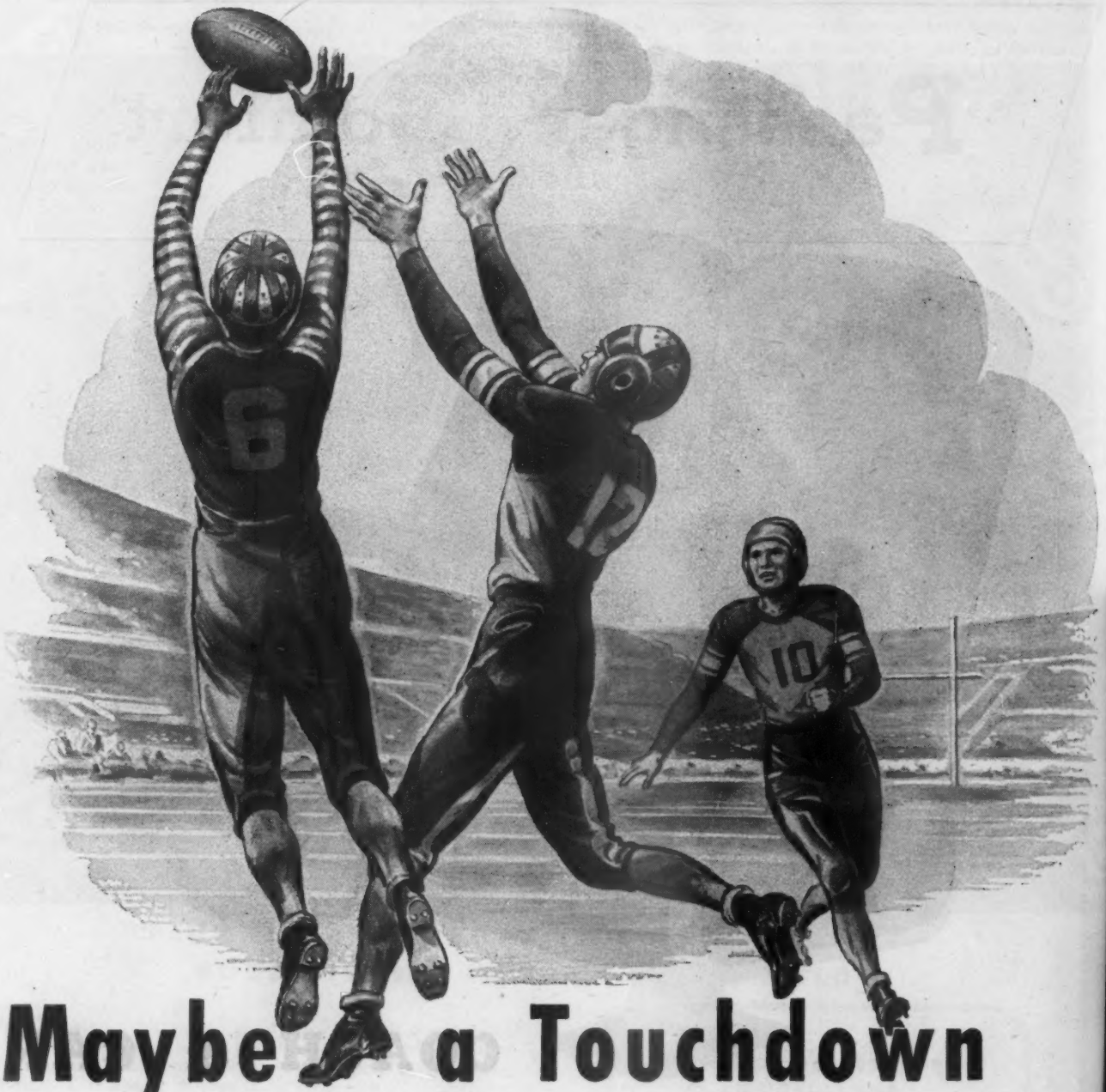
. . . lower in maintenance

. . . complete in passenger comfort

These seats fully covered by patents

COACH & CAR EQUIPMENT CORP.

2860 South Quinn Street, Chicago 8, Illinois



Maybe a Touchdown

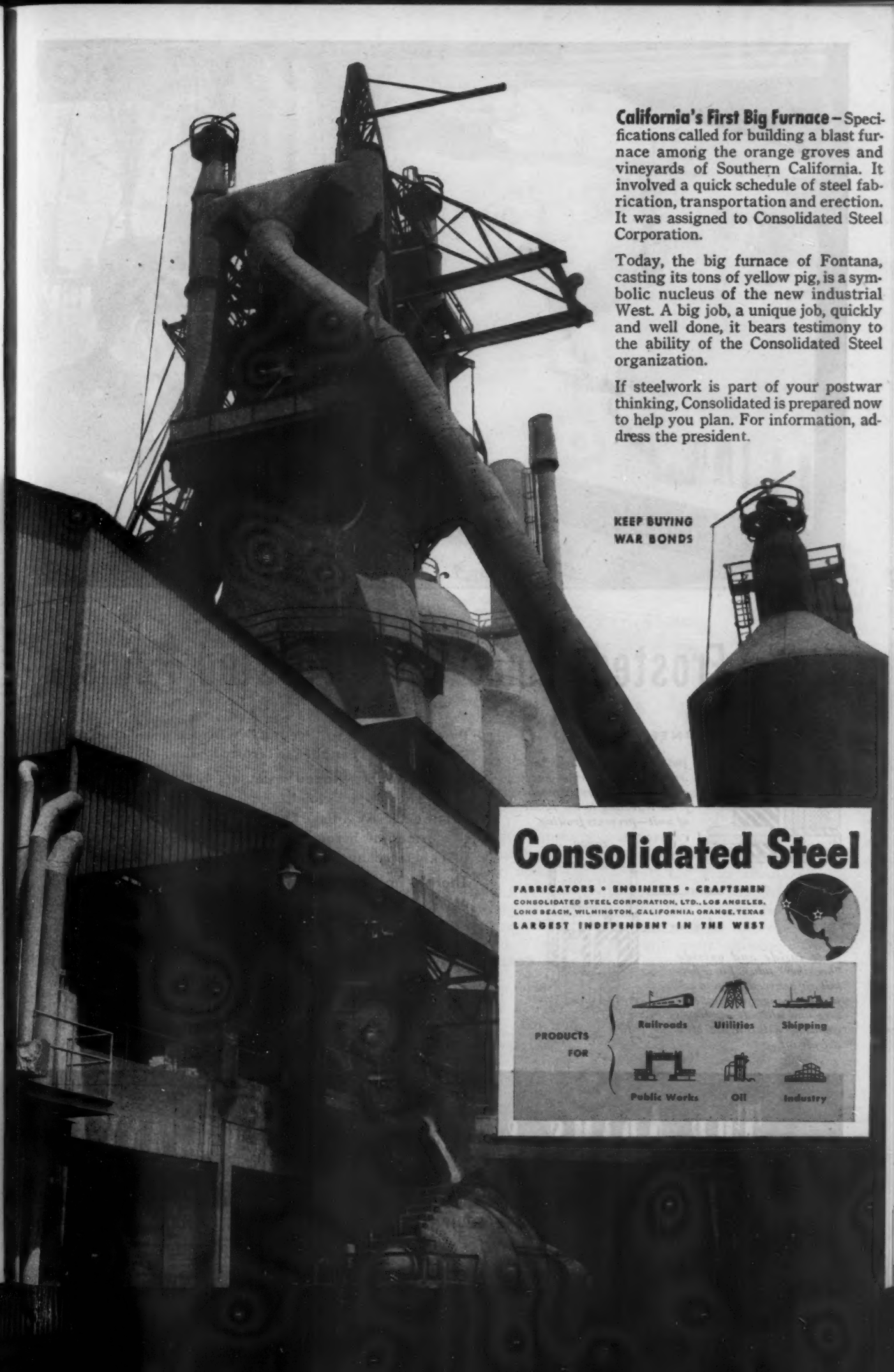
Hamilton Steam and Diesel Engines, Cannon and the Machine Tools to make them.

BUT KEEP THAT GUARD UP!

GENERAL MACHINERY CORPORATION

HAMILTON, OHIO

THE NILES TOOL WORKS COMPANY • THE HOOVEN, OWENS, RENTSCHLER CO. • GENERAL MACHINERY ORDNANCE CORPORATION



California's First Big Furnace – Specifications called for building a blast furnace among the orange groves and vineyards of Southern California. It involved a quick schedule of steel fabrication, transportation and erection. It was assigned to Consolidated Steel Corporation.

Today, the big furnace of Fontana, casting its tons of yellow pig, is a symbolic nucleus of the new industrial West. A big job, a unique job, quickly and well done, it bears testimony to the ability of the Consolidated Steel organization.

If steelwork is part of your postwar thinking, Consolidated is prepared now to help you plan. For information, address the president.

KEEP BUYING
WAR BONDS

Consolidated Steel

FABRICATORS • ENGINEERS • CRAFTSMEN

CONSOLIDATED STEEL CORPORATION, LTD., LOS ANGELES, LONG BEACH, WILMINGTON, CALIFORNIA; ORANGE, TEXAS

LARGEST INDEPENDENT IN THE WEST

PRODUCTS FOR

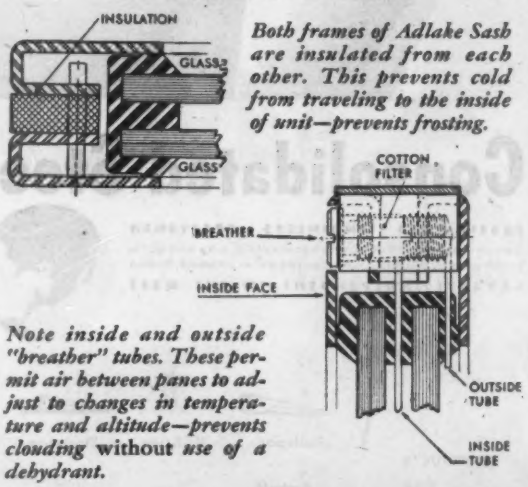
Railroads · Utilities · Shipping

Public Works · Oil · Industry



No Frosted Panes···No "Frosted Pains"

NO MAINTENANCE



Both frames of Adlake Sash are insulated from each other. This prevents cold from traveling to the inside of unit—prevents frosting.

Note inside and outside "breather" tubes. These permit air between panes to adjust to changes in temperature and altitude—prevents clouding without *use of a dehydrant.*

Passengers want to "see out." When they can't, they get "frosted up." Then they're "frosted pains."

Adlake double-glazed sash units *stay* clear. They do not frost. They do not cloud.

The exclusive Adlake "breather" permits the air between two panes of hermetically sealed glass to adjust itself quickly to changes in temperature and altitude.

There is no dehydrating compound to become saturated and require replacement. Adlake double-glazed windows require *NO MAINTENANCE* except routine washing or replacing broken panes.

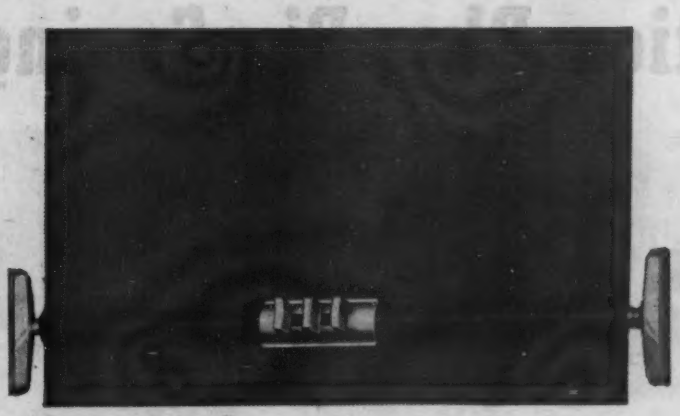
Steel frames (anti-rust treated, or aluminum if available) provide time-proved principles of construction—for new or reconditioned cars. Request details and prices.

Adlake TRADE MARK

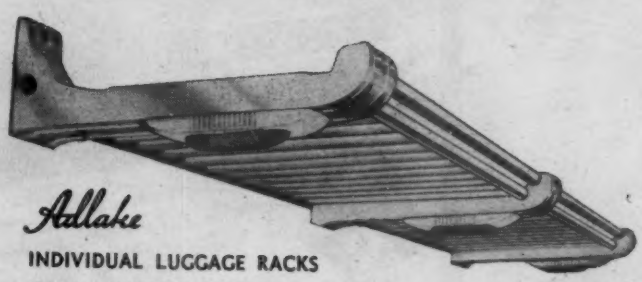
THE ADAMS & WESTLAKE COMPANY

ESTABLISHED IN 1857 — ELKHART, INDIANA — NEW YORK · CHICAGO

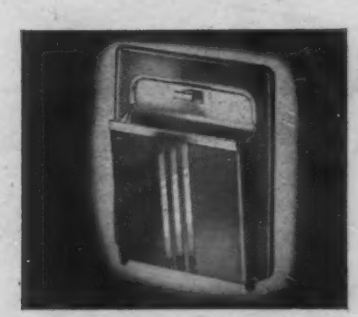
MANUFACTURERS OF ADLAKE SPECIALTIES AND EQUIPMENT FOR RAILWAY, AIRWAY, HIGHWAY, AND WATERWAY



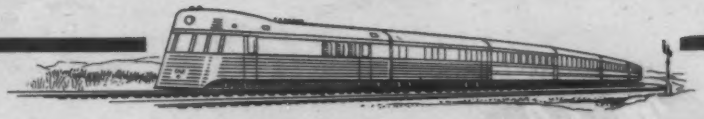
Adlake
STREAMLINED NOISELESS
WINDOW CURTAINS



Adlake
INDIVIDUAL LUGGAGE RACKS
WITH LIGHTING FIXTURES



Adlake ASH RECEPTACLES



Even more than "All the Comforts of Home"

PASSENGERS relax! They recognize that modern, satisfying "something" about Adlake-equipped trains. Even the best of travelers secretly admit to themselves that "home was never like this."

On 18 roads, 86 of the world's finest trains are Adlake-equipped. Famous Adlake Double-Glazed Window Sash . . . streamlined and noiseless window curtains styled to tomorrow's trends . . . modern luggage racks including lighting fixtures . . . ash receptacles, wash stands, relays, hardware and locks . . . sectional diaphragms, vestibule curtains . . . and other Adlake equipment make passenger boosters . . . and make every road that uses them boosters, too.

Problems of present and postwar train equipment to hold passenger good will become simpler when you have all the facts about Adlake units. Many of them can be adapted to present equipment to bridge the gap between now and the time you will be able to give the traveling public still more of what is expected in service.

May we help you in your plans? Write for detailed data.

Adlake TRADE MARK

THE ADAMS & WESTLAKE COMPANY

ESTABLISHED IN 1857 — ELKHART, INDIANA — NEW YORK · CHICAGO

MANUFACTURERS OF ADLAKE SPECIALTIES AND EQUIPMENT FOR RAILWAY, AIRWAY, HIGHWAY, AND WATERWAY

Full Protection Plus Big Savings



Model 10
HIGHWAY CROSSING SIGNAL

Over 7 Years

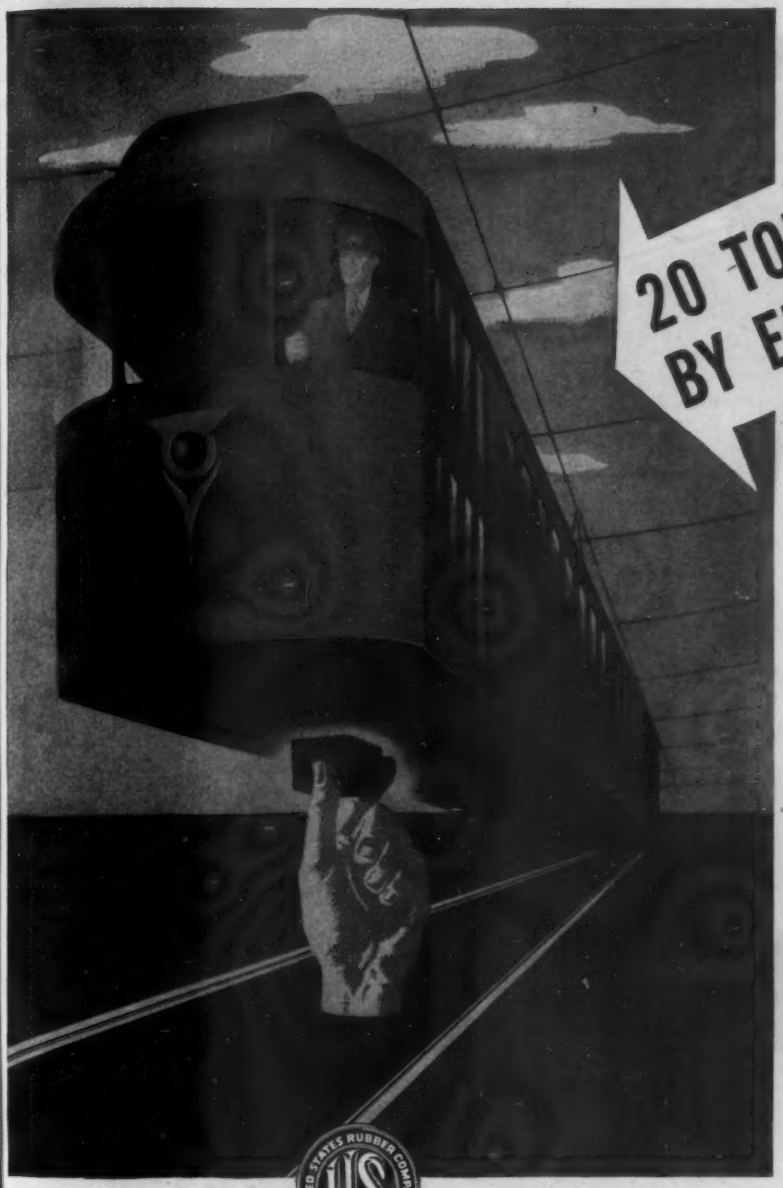
ago at this major intersection MODEL 10 SIGNALS undertook the job of protecting life and property. Since then 305,960 trains and approximately 89,000,000 motor vehicles have passed over this crossing—WITH NOT A SINGLE ACCIDENT.

In addition, this installation has returned its initial investment almost six times. Six men formerly needed at the crossing (two men per 8 hour shift) were released for assignment to other duties. Since 1937 a monthly saving of about $800.00 has accrued.



WESTERN RAILROAD SUPPLY COMPANY

2360 South Ashland Avenue — General Offices and Factory — Chicago 8, Illinois



20 TONS SUPPORTED BY ENGINEERED RUBBER

Only eight pieces of scientifically compounded rubber support 40,000 pounds!

These rubber mountings were designed by United States Rubber Company to replace the leaf springs of trucks on street cars, and smooth out the ride. There is no sliding friction on such rubber springs... therefore no maintenance. Stress in all structural members above the springs is also reduced; much weight is saved through the relatively small size of the mountings.

Performance like this is responsible for the increased use of engineered rubber mountings not only on street cars, but also on streamlined trains and other heavy vehicles.

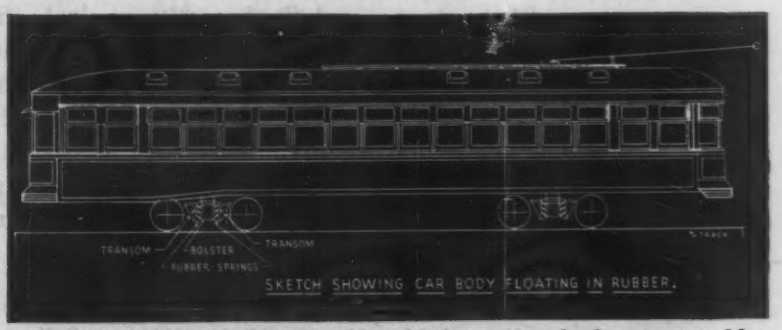
Such rubber - bonded - to - metal parts cushion destructive vibration, reduce noise both inside and out and cut maintenance costs without sacrificing safety.

Behind this apparently simple development—pioneered by U. S. Rubber—lies a vast storehouse of scientific knowledge. Research over many years by U.S. Rubber technicians has accumulated a fund of information so precise and extensive that *it is now possible to pre-determine the characteristics of engineered rubber.*

SERVING THROUGH SCIENCE



AFTER SIX YEARS OF SERVICE — Unretouched photograph of one of the rubber sandwiches which replaced leaf springs six years ago on a street car operating in a large Eastern city. When examined recently all were still in excellent condition.

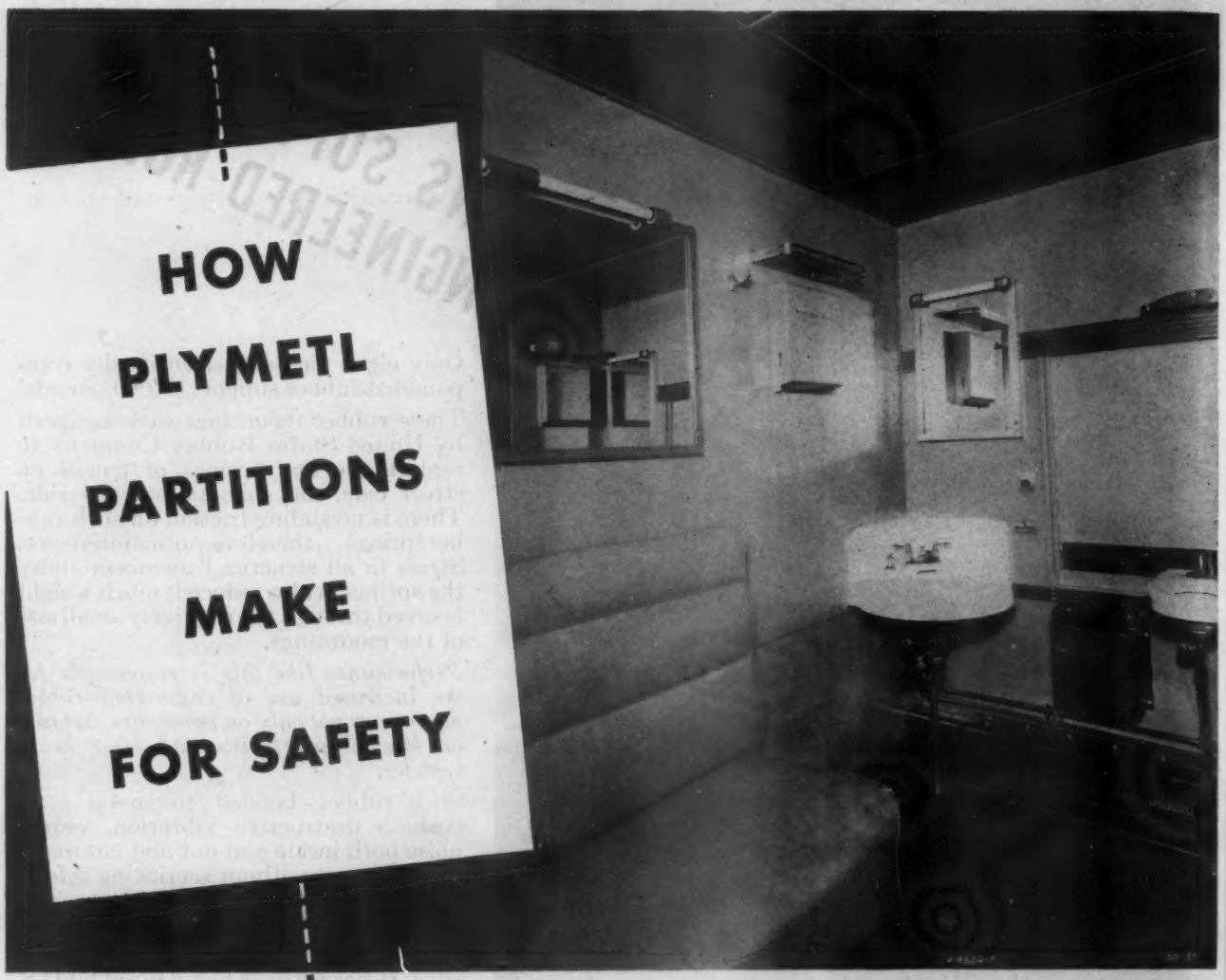


STREET CAR FLOATED ON RUBBER—Sketch of street car body supported by U. S. engineered rubber mountings. Note that these mountings are placed on each side of the bolster, and at both ends. The introduction of rubber as a structural part of heavy vehicles has done much to minimize noise, vibration, and shock not only on street cars but on railway cars, trucks and busses.

Listen to the Philharmonic-Symphony program over the CBS network Sunday afternoon, 3:00 to 4:30 E.W.T. Carl Van Doren and a guest star present an interlude of historical significance.

UNITED STATES RUBBER COMPANY

1230 Sixth Avenue • Rockefeller Center • New York 20, N. Y. • *In Canada:* Dominion Rubber Co., Ltd.



Interior of Women's powder room on a New York Central train. All paneling is durable Plymetl.

In this matter of safety, Plymetl partitions make a very real contribution in several important ways! Such partitions slash off dead weight! By eliminating weight economically without weakening the car structure, Plymetl partitions make it possible to add more strength in important parts of the car... important from the point of view of safety... such as the end construction, the main sills, or the trucks. Moreover, Plymetl usually increases the strength of the partitions themselves. The weight savings effected by Plymetl will oftentimes more than offset those weight increases found necessary in the interest of greater safety.

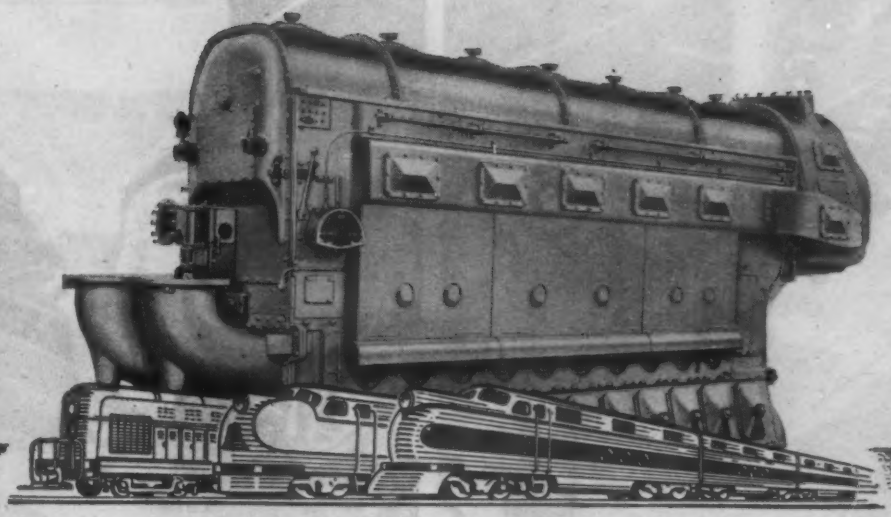
Plymetl partitions, in addition, make a direct contribution to safety. Their ability to block the progress of fire and to take impacts or shocks elastically are qualities which are well demonstrated by case records.

Take weight off your cars *economically* and *safely* by using Plymetl partitions.

HASKELITE PLYMETL

HASKELITE MANUFACTURING CORPORATION
Grand Rapids 2, Michigan
Offices:
Chicago • Detroit • New York • St. Louis • Dallas

Low Fuel Consumption ...Another Fairbanks-Morse Diesel Locomotive Advantage



THE Opposed-Piston Diesel which powers Fairbanks-Morse Locomotives is famous for its low fuel oil consumption.

This, of course, cuts locomotive operating costs. And even more important, it indicates high overall engine efficiency . . . reflects superior design and manufacture.

Fairbanks, Morse & Co., Fairbanks-Morse Building, Chicago 5, Illinois.

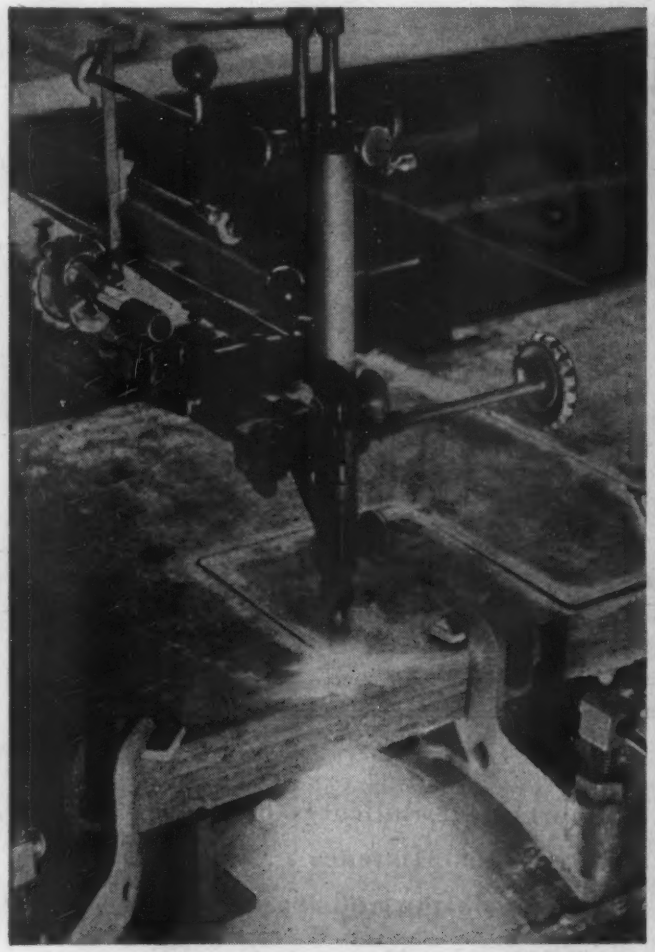
BUY MORE WAR BONDS

A name worth remembering!

FAIRBANKS-MORSE

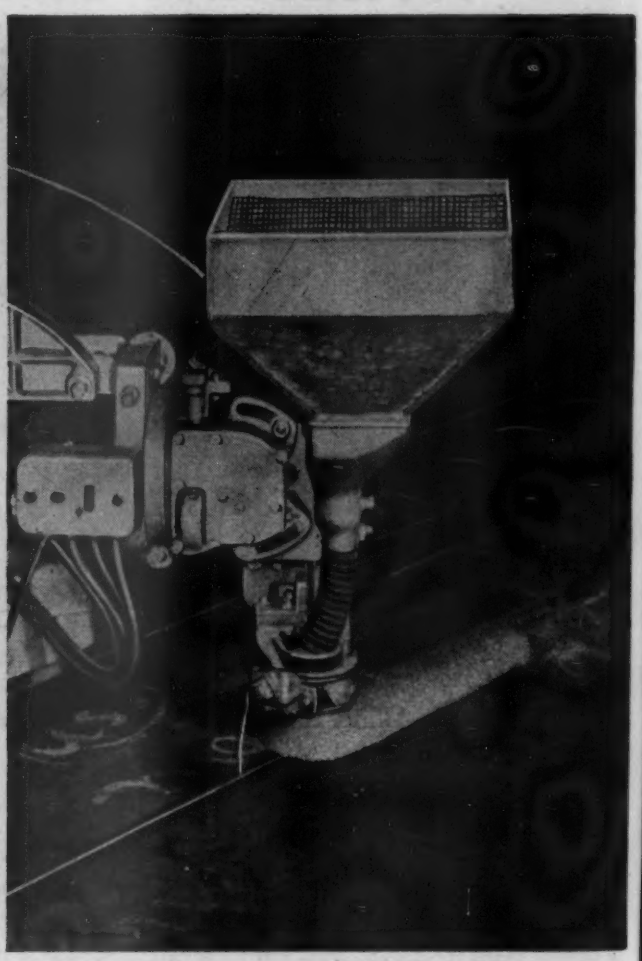
PLAN FOR SAVINGS IN 1945 with

In Fabricating Steel Car and Locomotive Equipment



MECHANIZED OXY-ACETYLENE CUTTING

● In cutting plate, forgings, and structural steel to shape for car and locomotive parts, Oxweld's oxy-acetylene method is effecting savings in time and materials. The oxy-acetylene flame quickly slices through steel along straight lines, circles, or irregular contours, doing work otherwise requiring considerable expenditures of machine time and manpower. By flame-cutting, parts can be produced as needed from stock steel. The flame-cut edges are clean and smooth, in *most* cases requiring no machining before assembly. In the illustration above, an Oxweld cutting machine is shape-cutting five buffer plates simultaneously from tightly clamped ⅝-in. plate.



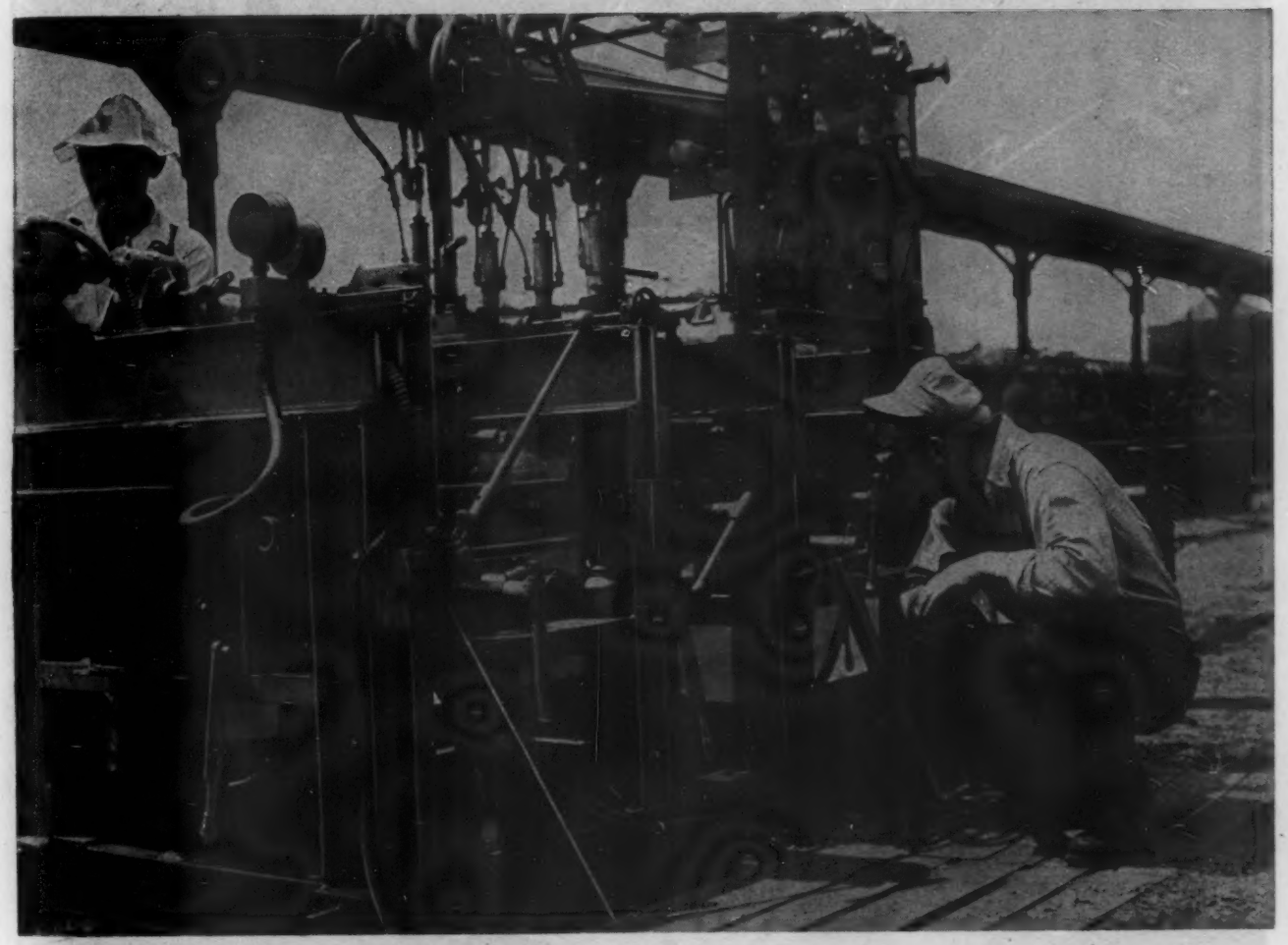
UNIONMELT ELECTRIC WELDING

● UNIONMELT automatic electric welding installations can be designed to handle production operations or single-order jobs. The UNIONMELT method is several times faster than any other method that deposits welding rod; it produces uniform, high-strength welds at low costs and with minimum dependence upon the skill of the individual welding operator. Several standard fixed or portable types of equipment are available for use on heavy sections, plate, or sheet. These standard units can be readily adapted to weld many types of car and locomotive parts. Oxweld will help you plan an installation that will fit the specific needs of your shop.

BUY UNITED STATES WAR BONDS AND STAMPS

OXWELD RAILROAD SERVICE

In Maintaining Smooth-Riding Track



PRESSURE-WELDING OF RAIL

● Rails joined by Oxweld's pressure-welding method provide a continuously smooth surface. Rail-end batter and joint maintenance are eliminated, and there are no bolts, bolt holes, or joint fastenings to become loose or to act as a starting point for corrosion.

The advantages of pressure-welded rail make it particularly well-suited for installation in open track locations especially where roadbed conditions make maintenance difficult and for use on bridges, tunnels, road crossings, and station platforms. Continuous pressure-welded rail can be laid with a minimum of traffic delay, and installed in the same manner as standard-length rail.

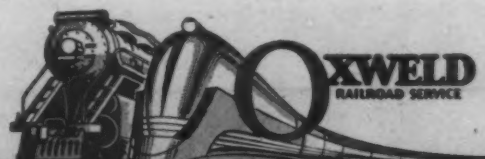
For further information on UNIONMELT welding, and on Oxweld flame-cutting, pressure-welding of rail, and other Oxweld methods get in touch with your Oxweld representative.

THE OXWELD RAILROAD SERVICE COMPANY

Unit of Union Carbide and Carbon Corporation

UCC

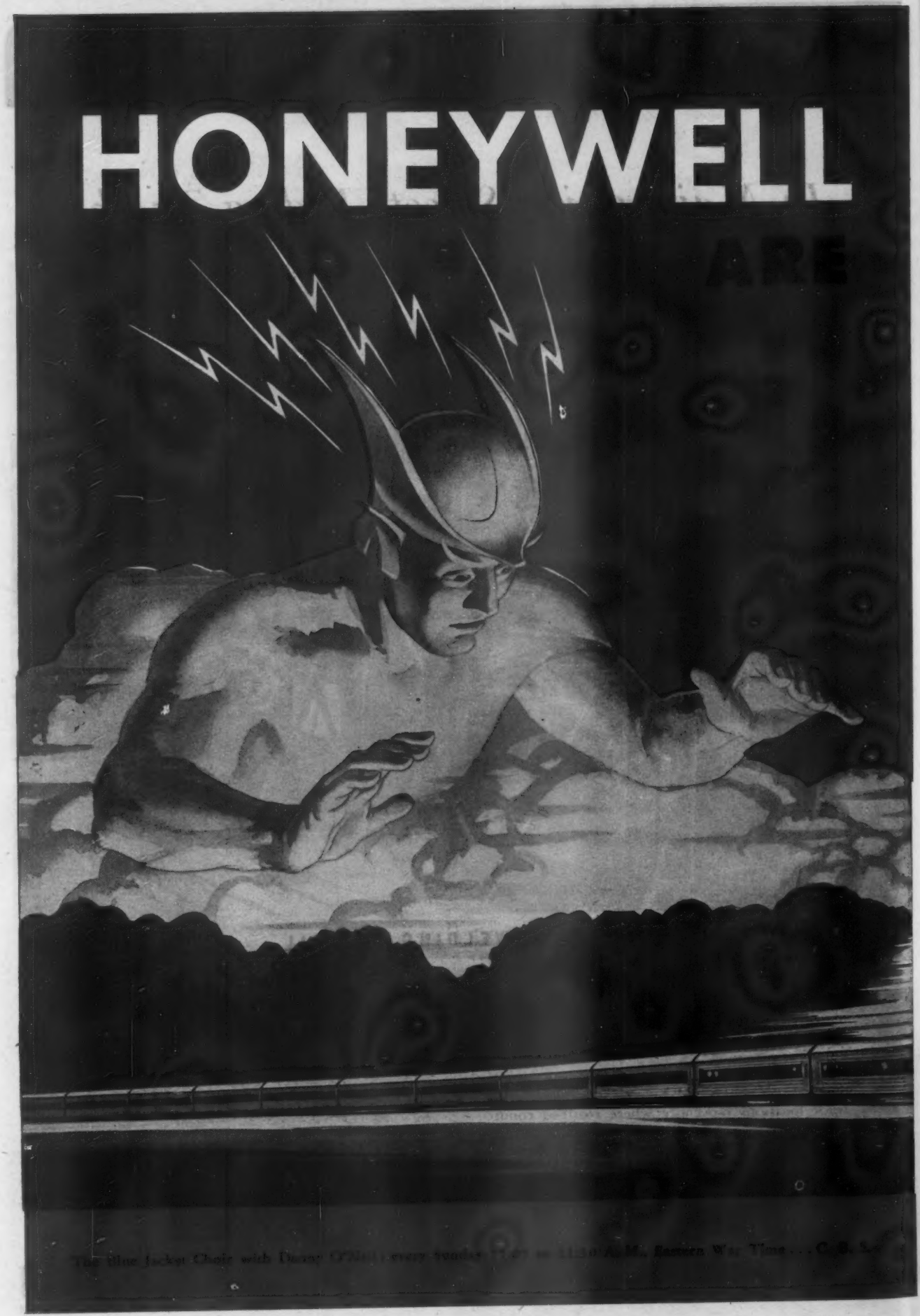
Carbide and Carbon Building Chicago and New York



SINCE 1912 THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS

The words "Unionmelt" and "Oxweld" are registered trade-marks.

P-16896


HONEYWELL

Electrons COMING . . . . . .

FOR THE TEMPERATURE CONTROL OF PASSENGER CARS!

Electronic temperature and air conditioning control is particularly suited for railway passenger car use because it is not affected by vibration or changes in altitude.

Electronic control is many times more sensitive than present day control, and, of course, is extremely accurate. The control point may be set at the controller or at a remote point by merely adjusting a simple resistance unit, with immediate temperature change resulting. The thermostat may be split into two or more units or stretched across a wall, so that the temperature can be measured over a considerable area.

Another advantage of electronic control is that it permits the location of nearly every moving part in a central control panel. The thermostat itself can be made very small. It can be nothing more than a button or several buttons on the wall, averaging the temperature of the car or the compartment. Electronic control will be easily serviced through replacement of sub-assemblies. The service man need not be an expert in electronics.

Watch for Honeywell electronic temperature and air conditioning control. It's coming. Minneapolis-Honeywell Regulator Company, 434 E. Erie St., Chicago 11, Ill.



MINNEAPOLIS **Honeywell**

CONTROL SYSTEMS



This formula is important to you because design engineers use it to determine which sheet steel they can use to build strong railroad cars with the least weight.

When properly designed, a structure of ARMCO High-Strength Steel will withstand 40 to 60% more stress than one of ordinary steel before it reaches permanent deformation. Besides being stronger, ARMCO 50Y and 55Y low-alloy high-strength steels have greater atmospheric corrosion resistance. Where utmost corrosion resistance is necessary, they can be supplied with special protective coatings that extend useful service life.

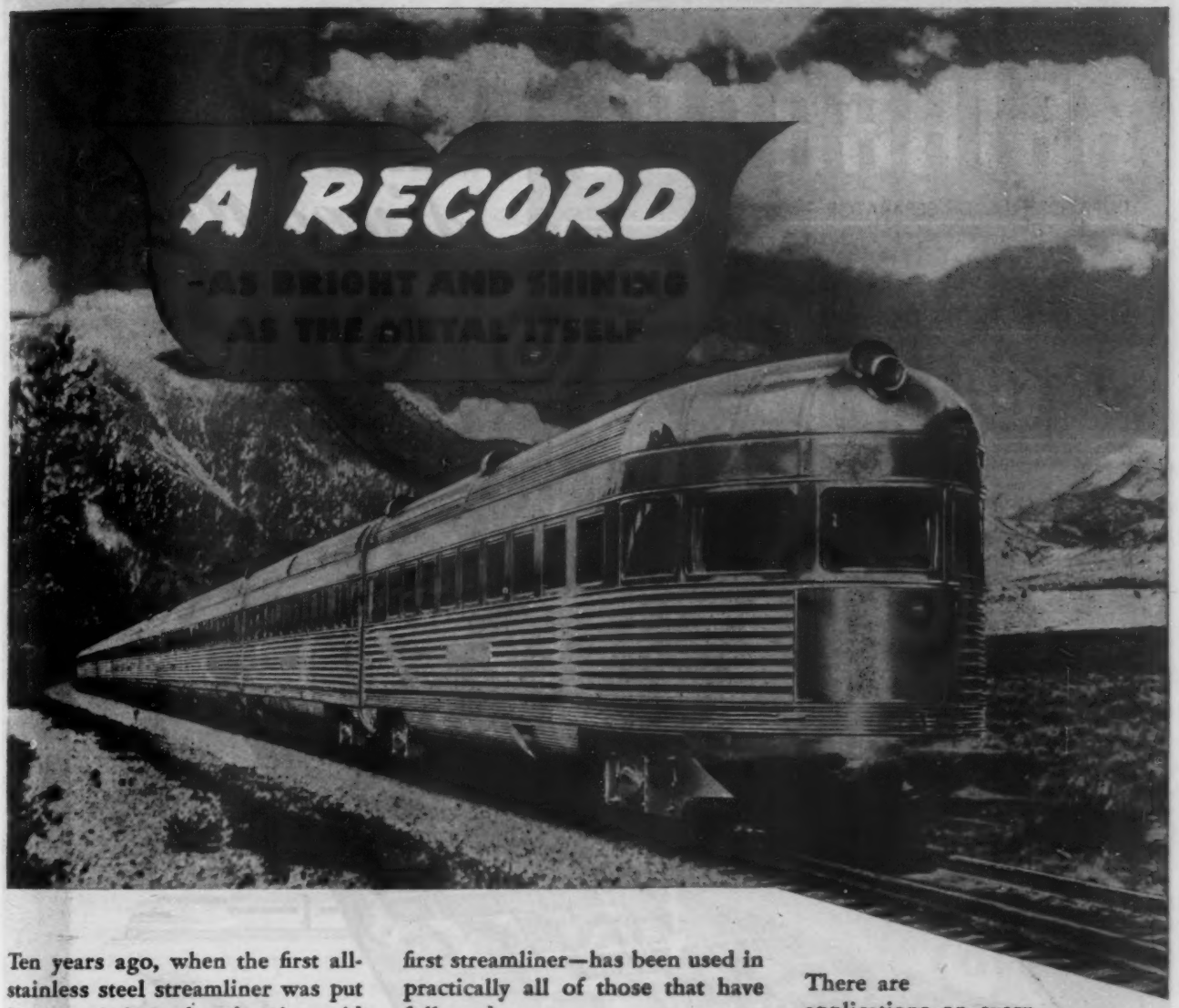
The minimum yield strengths of 50,000 and 55,000 psi. mean that designers can use these sheet steels to reduce the dead weight of rolling stock. This saves money for you by increasing payloads. ARMCO High-Strength Steels are easily fabricated and have excellent welding properties.

There are other ARMCO products to help you operate your roads more profitably after the war . . . Stainless Steels for appearance and rustless construction; ARMCO PAINTGRIP grades for long paint life; ZINCGRIP for complete zinc protection of severely formed parts—these are only a few to consider. Armco Railroad Sales Co. Incorporated, 1881 Curtis Street, Middletown, Ohio.

EXPORT: THE ARMCO INTERNATIONAL CORPORATION

SPECIAL PURPOSE ★ ARMCO ★ SHEET METALS

ARMCO RAILROAD SALES CO. INC.



Ten years ago, when the first all-stainless steel streamliner was put into operation, the skeptics said that it was a "novelty," a "plaything"—that it never would replace the then standard passenger trains.

Today, they admit their error—and are among the most enthusiastic supporters of light-weight, high-speed, comfortable passenger equipment.

The records of the stainless steel streamliners covering millions of operation miles on various roads tell the story—of increased passenger-miles, of reduced operation and maintenance costs, of increased profits.

Republic ENDURO Stainless Steel was used in the construction of the first streamliner—has been used in practically all of those that have followed.

The high strength of this metal permits marked reductions in weight without sacrifice of safety. Its resistance to fatigue insures an unusually high endurance limit. Its resistance to corrosion permits the use of thin sections without hazard or without need for painting. Its easy weldability permits sound, economical construction. Its smooth, lustrous surface simplifies cleaning operations.

There are applications on every road, on every train, where ENDURO can be a pleasure to patrons and a continuing source of profit to operators. Basic construction, food processing and handling equipment, and trim are only three of many. We shall be glad to tell you more if you will write us.

REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio

GENERAL OFFICES • CLEVELAND 1, OHIO

Berger Manufacturing Division • Culvert Division
Niles Steel Products Division • Steel and Tubes Division
Union Drawn Steel Division • Truscon Steel Company
Export Department: Chrysler Building, New York 17, N. Y.

Republic

ENDURO STAINLESS STEEL

Reg. U. S. Pat. Off.

Other Republic Products include Carbon and A

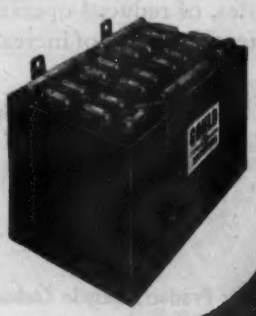
THE BATTERY PICKED BY ENGINEERS

KATHANODE GLASSKLAD *since 1925*



The Gould Kathanode is not a new battery. Its basic principle of spun glass protection was first introduced in America by Gould twenty years ago, and it continues to be the outstanding battery of its type.

Behind today's Gould Kathanode are two decades of constant research and improvement . . . two decades of actual operation in field service . . . two decades of unqualified success.



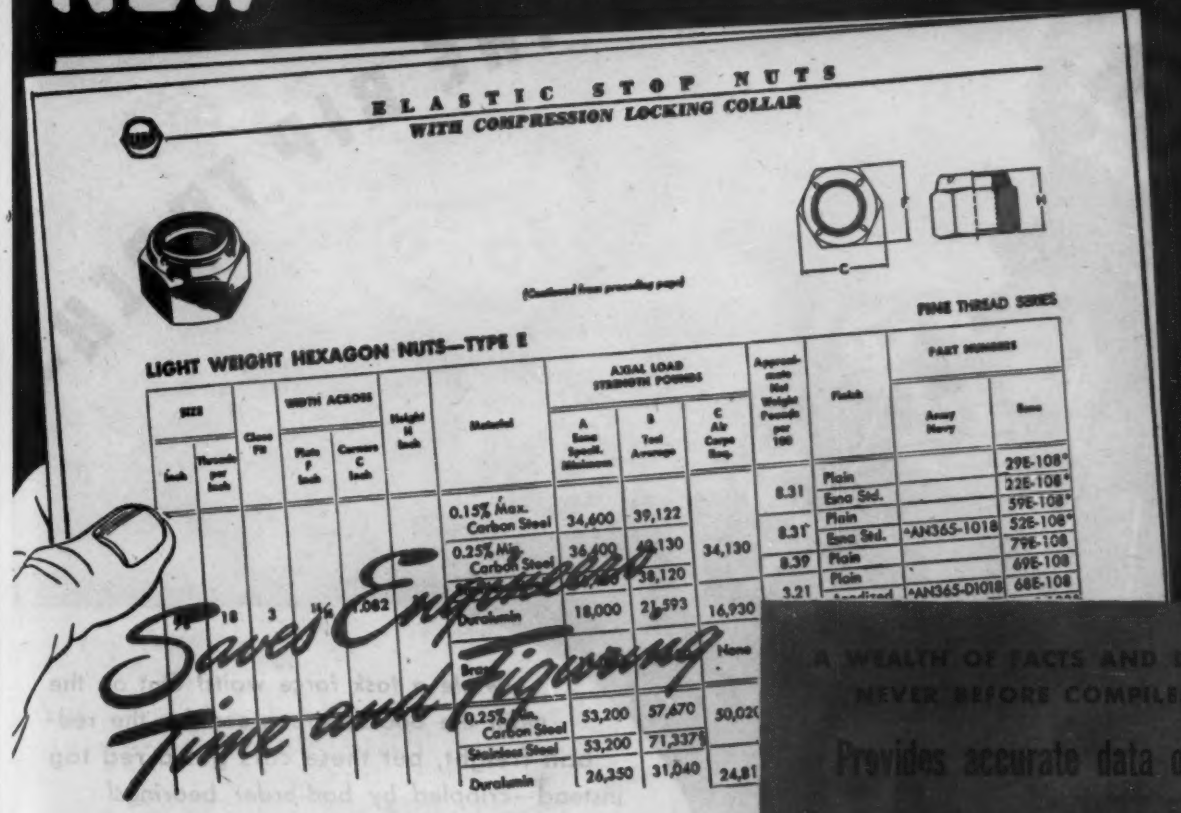
Write Dept. 511 for Catalog 100 on Kathanode Glassklad Batteries for Industrial Trucks and Tractors.

FOR EXCELLENCE IN STORAGE BATTERY PRODUCTION AT DEPEW PLANT

GOULD

GOULD STORAGE BATTERY CORPORATION, Depew, N. Y.

NEW-ESNA DATA BOOK and CATALOG



Actually this is an engineering handbook. It's packed full of information every design engineer wants to know—full of details every purchasing man has to have.

In easy-to-find, tabulated form it gives you dimensions, materials, strength, weight and finish of the thousands of Elastic Stop Nuts that are available.

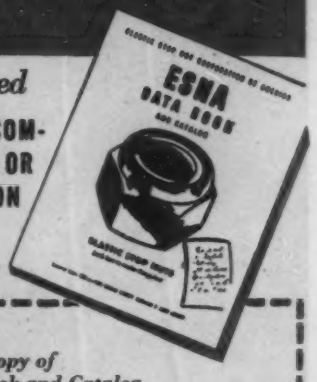
Right at the time when new products, new designs and new problems are heading for the drawing boards, this book puts in quick-to-find form, important design facts and special uses for these self-locking fastenings.

This book will save you time and frequently a lot of figuring. Yet it costs nothing. You may have a copy—free. Quantity limited. Mail this coupon or drop us a line on your company letterhead.

A WEALTH OF FACTS AND DATA NEVER BEFORE COMPILED

Provides accurate data on:

- Size
- Material
- Class Fit
- Axial Load Strength based on pull-test data
- Air Corps Requirements
- Weight
- Finish



Quantity Limited

WRITE ON YOUR COMPANY LETTERHEAD, OR ATTACH THIS COUPON AND MAIL TO:

DEPT. H, 1060 BROAD ST., NEWARK 2, NEW JERSEY.

Please send me a copy of the ESNA Data Book and Catalog.

Name: _____

Position: _____

Firm Name: _____

Address: _____

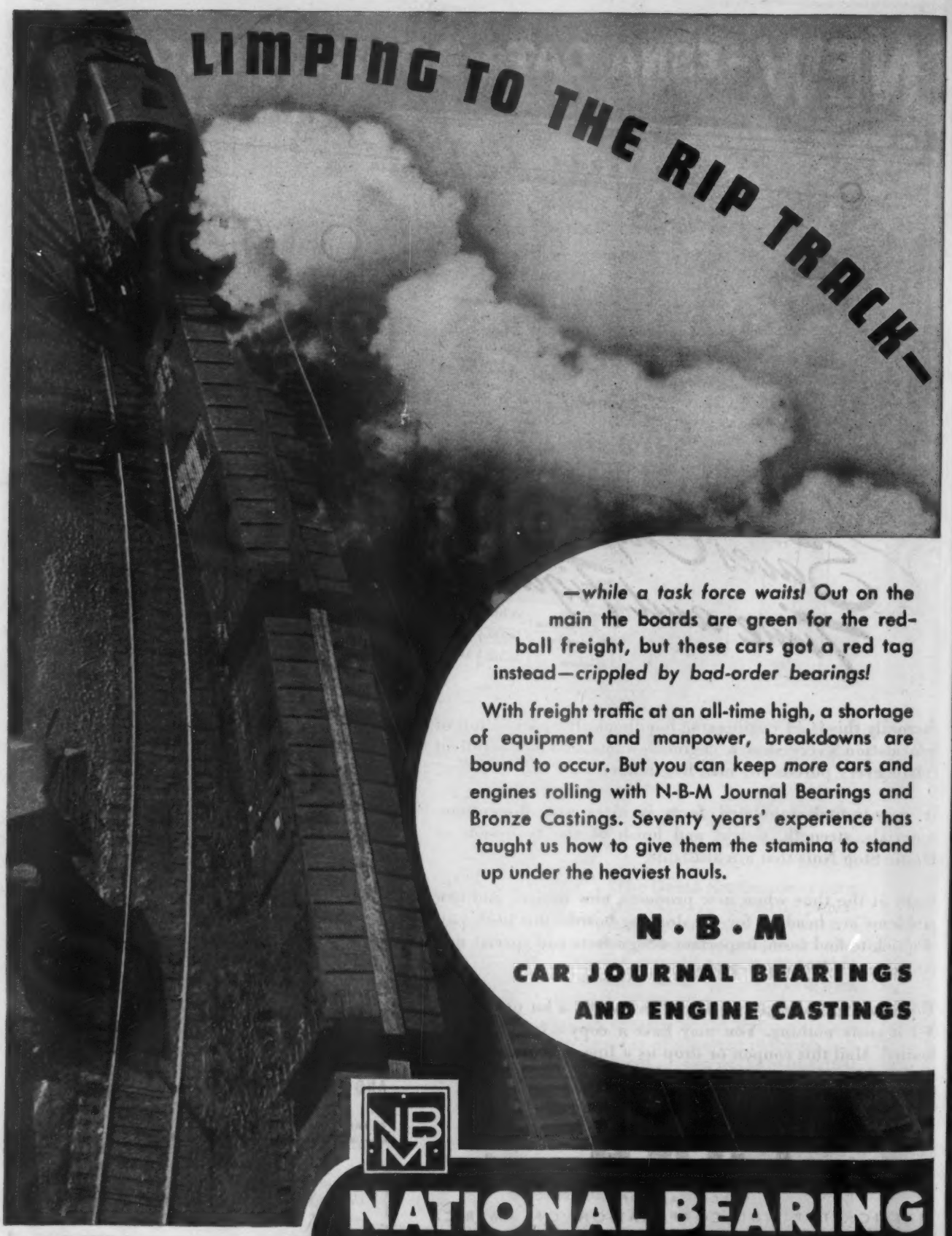
ESNA

TRADE MARK OF
ELASTIC STOP NUT CORPORATION OF AMERICA

ELASTIC STOP NUTS

Lock fast to make things last

UNION, NEW JERSEY AND LINCOLN, NEBRASKA



—while a task force waits! Out on the main the boards are green for the red-ball freight, but these cars got a red tag instead—*crippled by bad-order bearings!*

With freight traffic at an all-time high, a shortage of equipment and manpower, breakdowns are bound to occur. But you can keep *more* cars and engines rolling with N-B-M Journal Bearings and Bronze Castings. Seventy years' experience has taught us how to give them the stamina to stand up under the heaviest hauls.

N · B · M

CAR JOURNAL BEARINGS AND ENGINE CASTINGS

NBM

NATIONAL BEARING METALS CORPORATION

ST. LOUIS · NEW YORK

AMERICAN Brake Shoe COMPANY

QUICK, EASY REGLAZING

Readily removable screws and rubber glazing strips permit quick, easy replacement of either pane.



DEAD AIR SPACE



Moisture-free dead air space between inner and outer panes insulates against heat and cold. Fog, film and frost are completely eliminated.

No Fog
No Film
No Frost

NO SWEATING



Insulation of the outside to the inside frame eliminates inside-to-outside metal contact. There's no condensation to cause sweating on inside frame or sill.

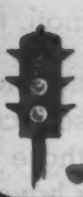
NEWLY DESIGNED EYES FOR POSTWAR TRANSPORTATION

TRAPS MOISTURE



Dehydrator Tube absorbs moisture trapped between panes when window is first sealed and when opened and resealed for servicing.

SERVICE SIGNAL



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SASH FOR EVERY TYPE OF TRANSPORTATION—ON LAND, ON THE SEAS, IN THE AIR





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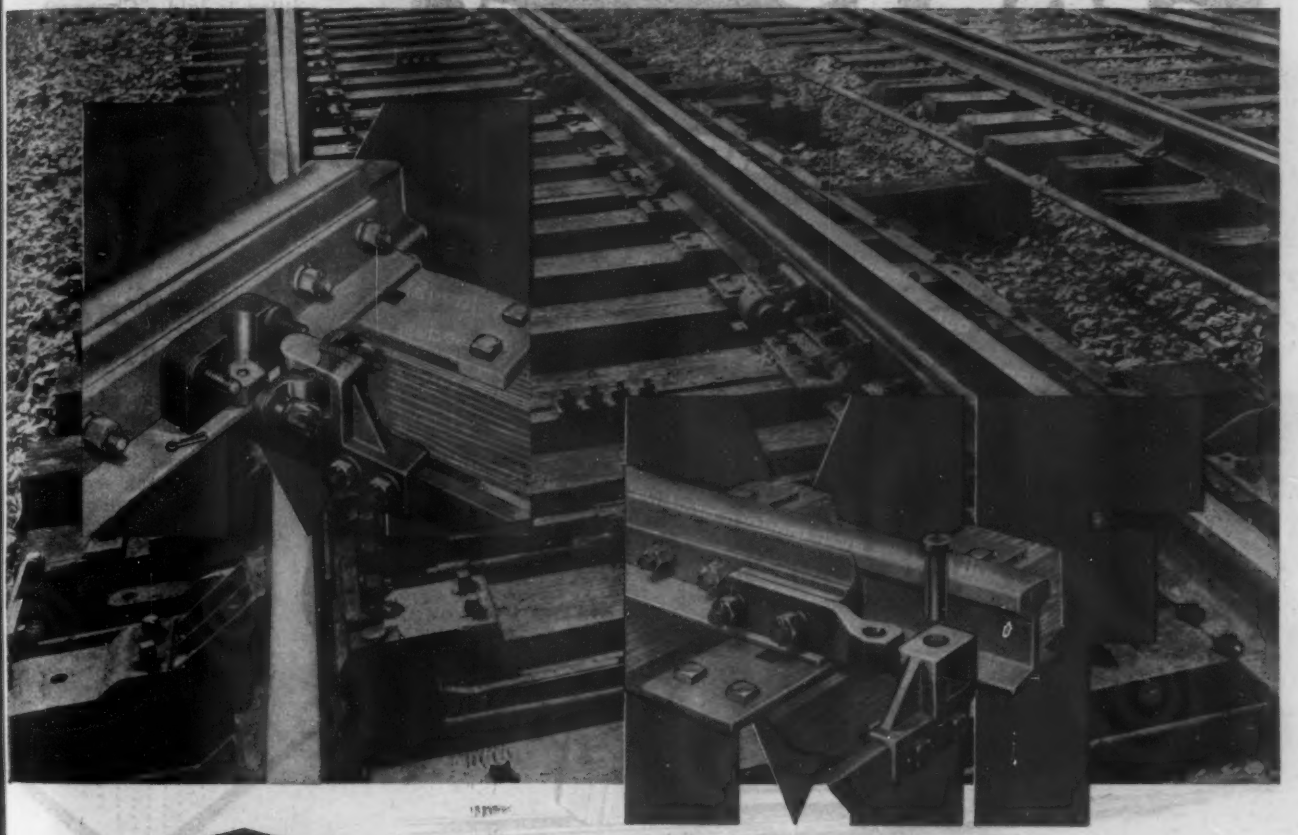
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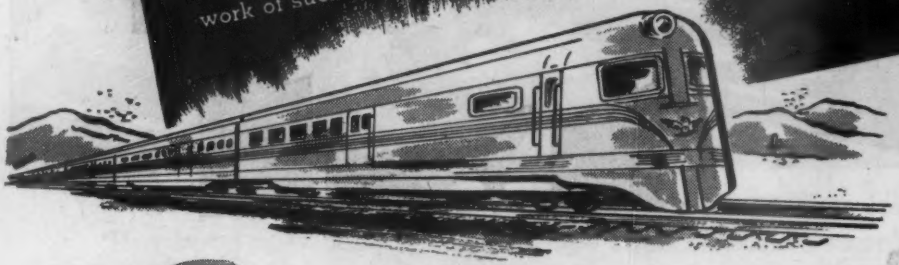
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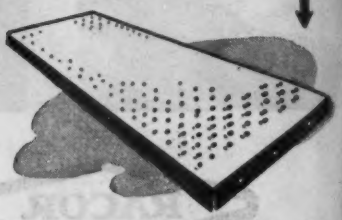
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Arched construction of this ideal anchorage base for composition car flooring gives "Chanarch" extraordinary strength with minimum weight. Even before composition is laid, "Chanarch" withstands loads far in excess of those likely to be encountered in actual service.



MORTON "Kass" Safety Tread

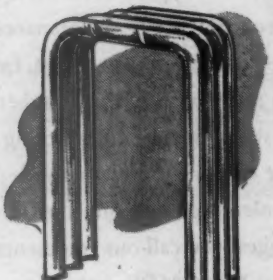
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MORE THAN ANYTHING ELSE BUILT THE RAILROADS AND KEEPS THEM RUNNING



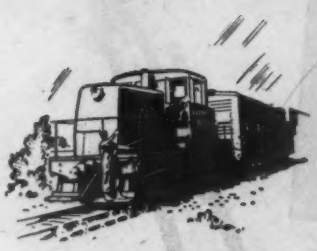
Pictured at the top are the surface mining operations at the Georgetown mine of the Hanna Coal Company in Harrison County, Ohio . . . one of eight mines and three mechanical cleaning plants operated by the Hanna Coal Company in Ohio. Coal operations of The M. A. Hanna Company and associates are located also in West Virginia, Pennsylvania, and Kentucky.

RAILROAD passenger revenue, $1,153,791,925 in 1921, declined to $329,341,830 in 1933. From 1936 to 1940 inclusive passenger business remained comparatively level; between 400 and 450 million per year. ● In 1941, under war-time impact, passenger revenue increased to $514,687,032; in 1942 to $1,028,185,616. In 1943 a record of $1,652,867,958 was achieved. At the war's ending, with private cars restored to the highways and the cessation of troop movements, a leveling-off may be anticipated. ● Comparison with the freight revenue from coal and coke (for example—$791,537,208 in 1940 and $1,045,005,115 in 1942) emphasizes the vast importance of coal as a principal source of railroad income. What promotes the interest of one advances that of the other.

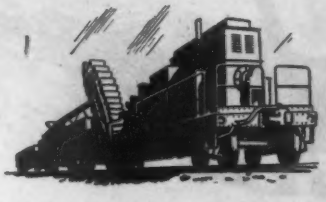
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Cummins Diesel-powered construction and maintenance-of-way equipment, such as locomotive cranes, shovels and modern ballast cars, is playing a vital behind-the-scenes role in handling today's record volume of rail traffic. In this service, the 24-hour-a-day dependability of Cummins Diesel power is paying dividends in time and money saved.



The Cummins Diesel's compact design and higher horsepower output per pound . . . its fuel economy . . . and its superior flexibility . . . explain why Cummins Diesels provide motive power for so many motor trains . . . auxiliary power for numerous streamlined passenger trains.

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Industrial Models: Portable and stationary engines, power units, and generating sets for service in any industry requiring heavy-duty power.

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Automotive Models: Designed for all types of heavy-duty trucks in either highway or off-the-highway service.

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Marine Models: Propulsion engines and marine type generating sets designed for all types of fishing boats, work boats, and pleasure craft.

Facts that Favor Cummins Diesel Power

When you specify Cummins Diesel power for the equipment you build or operate, you are specifying a diesel that is the product of a company whose entire 26 years of existence has been devoted to the manufacture of diesel engines *exclusively.*

You are specifying a diesel whose long record of proved performance covers all types of automotive, industrial and marine applications . . . a diesel whose performance on the *tough* jobs has led more than 132 leading manufacturers to offer it as original equipment . . . a diesel whose efficient operation and long life is made doubly certain by the backing of a nation-wide service organization. CUMMINS ENGINE COMPANY, INC., Columbus, Indiana.



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AILWAY AGE

Report No. 1 on the latest advance in railroad communications



V.H.F. RADIO provides an instant, practical link between engine . . . waycar . . . yard office

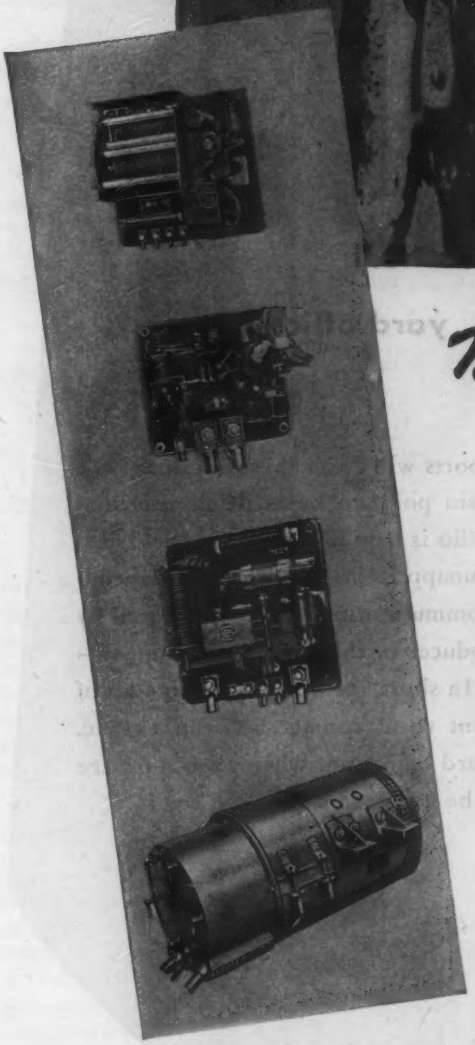
Actual road tests by leading railroads point to the fundamental fact that VHF Radio is the most *practical* form of railroad communication. VHF (very high frequency) Radio eliminates many of the limiting factors of other forms of train or radio communications. Installation requires no work on the right-of-way. . . . In no other form of radio communication are channels as private . . . it is entirely free from interruption by storms or other electrical interference—facts established over millions of miles of use in military aviation.

Succeeding reports will cover these advantages in detail. The main point to be made here is that while VHF Radio is new in the railroad field, it is backed by an unapproached record as a dependable form of communication, and is sponsored by the largest producer of this type of equipment—Bendix Radio. In short, the obvious advantages of instant, constant vocal contact between engine, caboose and yard office can, when all factors are weighed, best be achieved with VHF Radio.

Bendix RADIO DIVISION

BENDIX AVIATION CORPORATION, BALTIMORE 4, MARYLAND





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with complete equipment

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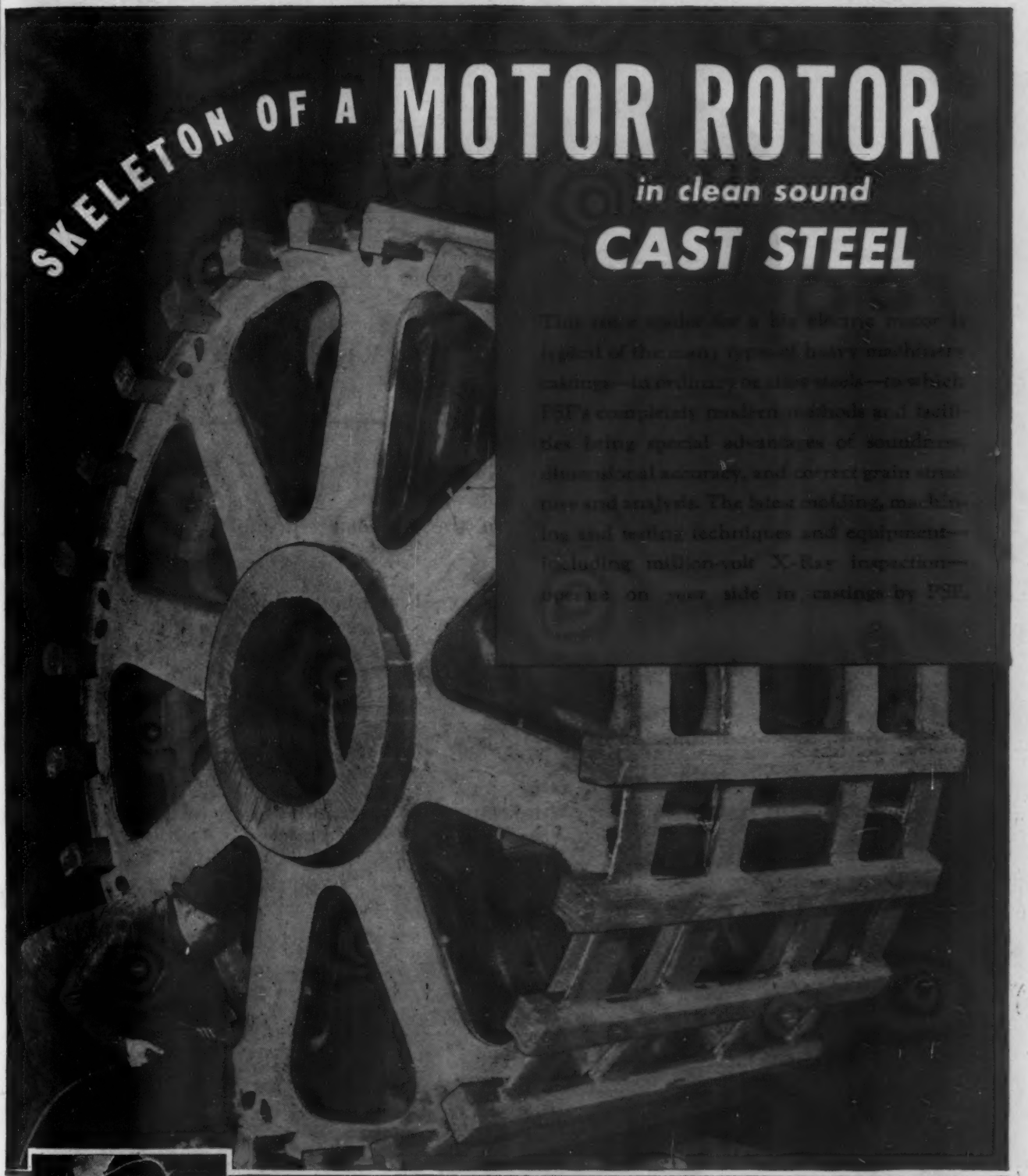
SAFETY units are designed and will operate as individual units in any axle generating system but maximum dependability and economy are assured by a complete assembly of SAFETY units allowing each unit to function at full capacity.

A complete SAFETY Axle Generating System in your post war new or reconditioned cars will result in greater efficiency and place the undivided responsibility for satisfactory operation and maintenance with one thoroughly competent organization.

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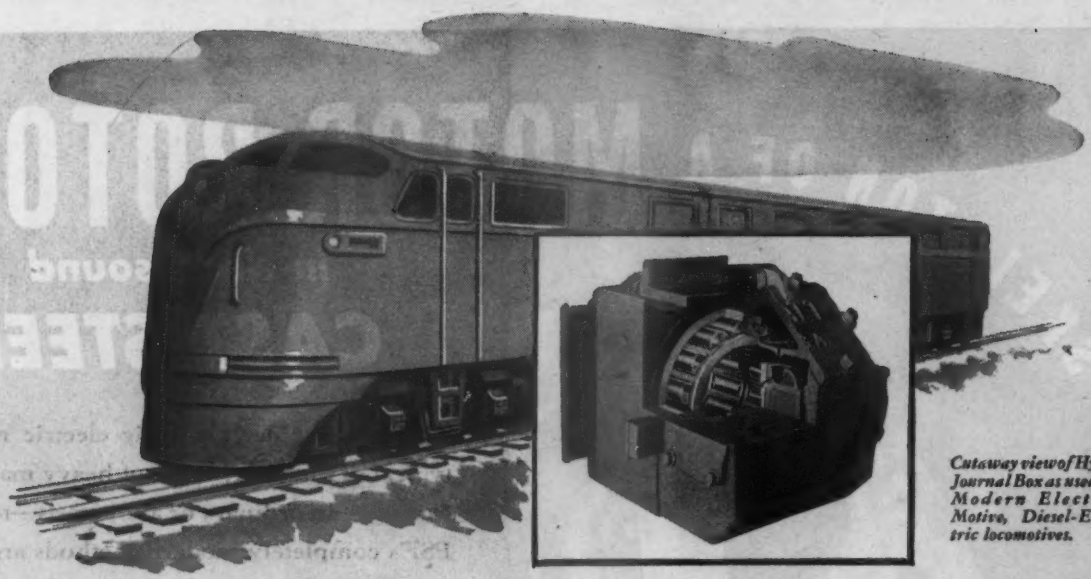
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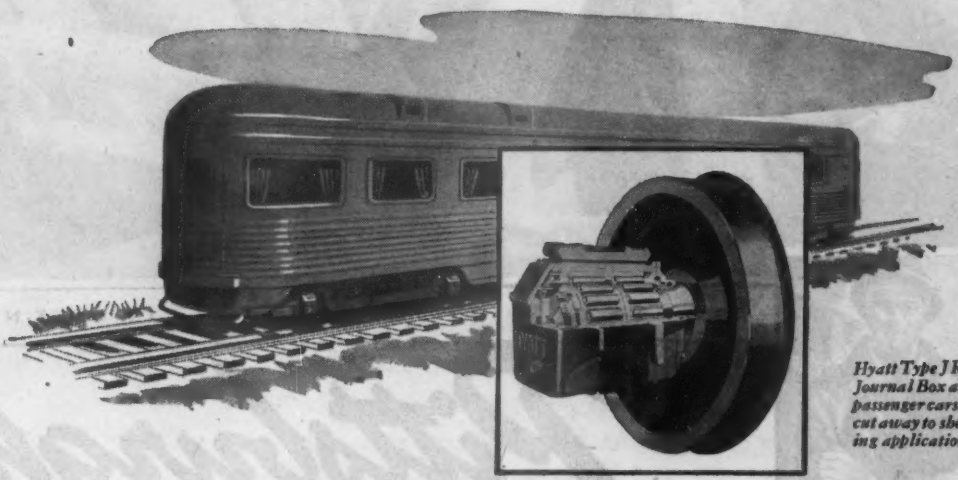
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Cutaway view of Hyatt Journal Box as used on Modern Electro-Motive, Diesel-Electric locomotives.

A Preview of the railroad equipment of tomorrow can be had by scanning the design boards of today—Prominent among major specification items will be Hyatt Roller Bearing Journal Boxes for cars and locomotives.

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Hyatt Type J Railroad Journal Box as used in passenger cars. Section cut away to show bearing application.

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Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered in U. S. Patent Office.

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In This Issue

Progress Achieved and Progress in the Making...

It may be said truly of passenger transportation, as of other elements of the complex fabric of existence, that the Present is the child of the Past and the parent of the Future. Now the grim shadows of war rest heavy on the Present, compelling concentration on the attainment of victory. Even so, it is altogether fitting to recount the unparalleled achievements which railway passenger service has contributed to that end, and from that inspiring Past to look ahead to the opportunities of a brighter Future. To those purposes this Passenger Progress issue is devoted.

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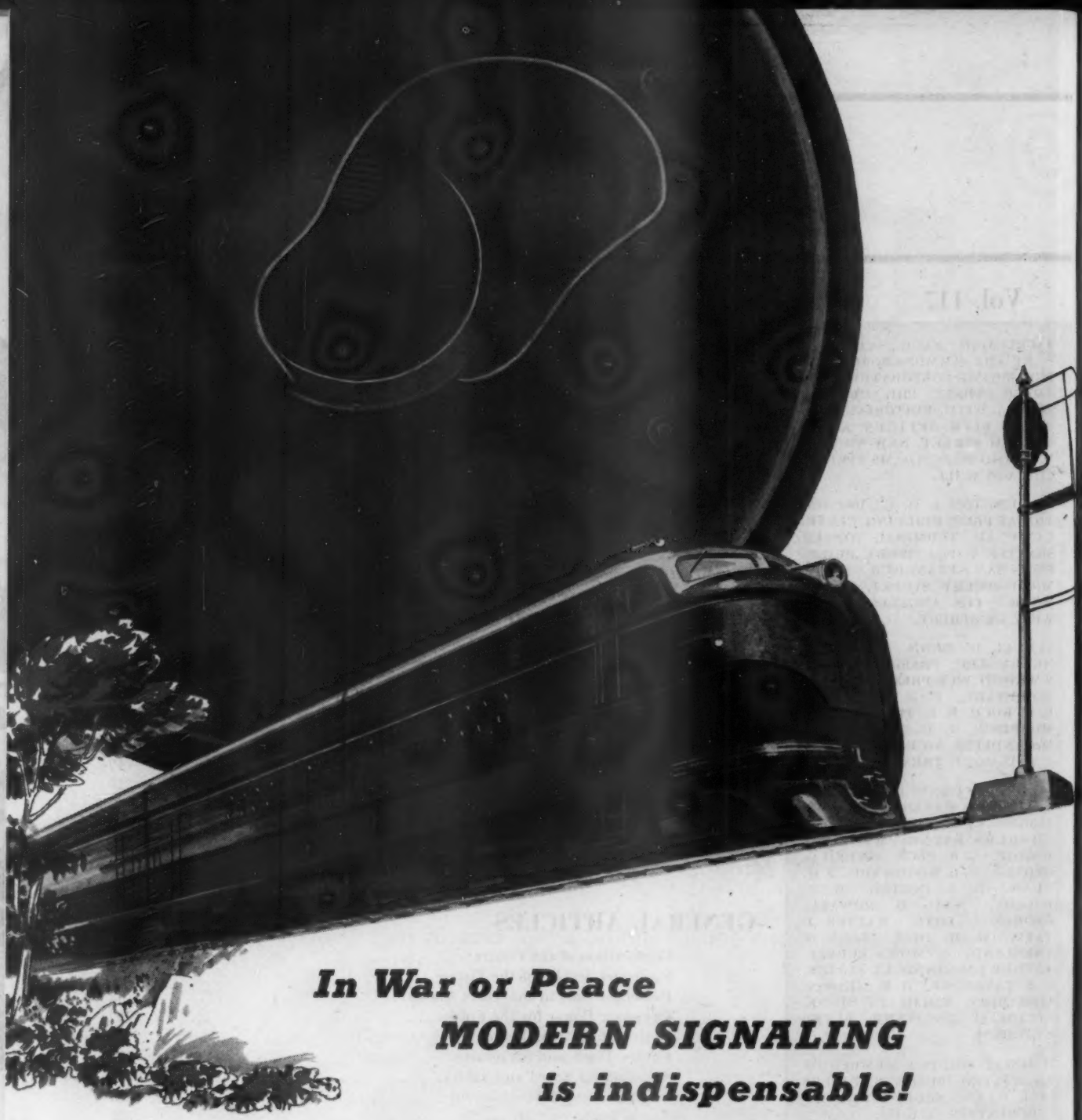
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The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

★

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MODERN Signal Systems, *at all times*, are acknowledged to be indispensable to the safe and efficient train operation of a modern railroad.

While designed primarily for peacetime operations, thousands of "Union" installations are greatly assisting the railroads in their magnificent war effort: Automatic Signals are saving time between terminals by permitting closer headway of trains; Power Interlockings are speeding the routing of traffic through terminals, junctions and crossovers; Continuously-controlled Cab Signals are promoting "on-time" performance despite adverse weather conditions; and Centralized Traffic Control is eliminating congestion, providing increased track capacity and reducing train time.

Later, these modern signal systems will help the railroads to solve many peacetime reconversion problems and thereby contribute further to Passenger Progress. Consult our nearest office!

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Passenger Progress at a Glance

A LOOK AHEAD: This year's Passenger Progress issue is not so much a review of the year's achievements (though they have been recorded, too) as it is a foretaste of things to come—when the restraints of war no longer dominate the picture; when pent-up demands of travelers for the utmost in service and comfort and safety in transportation can be satisfied; when long-planned renovations of existing railway facilities and installations of new equipment can be made on a scale fitting the industry's economic importance and technological skill; and when the railroads by superlative peacetime performance can capitalize on a wartime record that for good and all has disposed of the pernicious theory that their place is in the past and not in the future.

●

WORTH FIGHTING FOR: Some conclusions as to the competitive obstacles the railways will have to overcome in holding on to their full share of the post-war passenger business are drawn in an article discussing the plans of other common-carrier transportation agencies to grab as much of the railways' line-haul business as they can get. At the same time, it becomes clear that there is no occasion for the railways to throw up their hands and let the competition walk away with all the cream in the traffic, since effort expended in proper promotion of the advantages they have to offer, it is suggested, will keep their promised new-fangled ticket-issuing cash registers ringing. The air lines and bus operators will be in the thick of the fight for patronage, but the private automobile undoubtedly will resume its pre-war position as the foremost competitor of the passenger train. Not only because they have some talking-points of their own, but also because there will be much more travel after the war than ever before, it is predicted, the railways can expect to see their investments in new equipment and plant improvements show returns proportional to the ingenuity with which the attractions of travel by train are presented in this highly competitive market.

●

TROOP MOVEMENTS: While the character of traffic is changing as more and more service men complete their training and go overseas, the armed forces continue to require a large portion of the available passenger equipment, particularly because the numbers of wounded men and prisoners of war to be handled are steadily increasing, exacting even more consideration and rating higher priorities than the regular troop trains. These aspects of the wartime passenger business are developed in an article on page 783.

●

CONSULTING THE CUSTOMER: By the simple process of asking the purchaser of rail transportation what his preferences are as to equipment and service and performance, the railroads are developing some highly significant indicia to guide their post-war planning. The new trains that were put in service just before Pearl Harbor very evidently have whetted the public's appetite for comforts and conveniences, and the indications are that the railroads and equipment builders are going all-out to satisfy that appetite, once they get the green light on train construction. Results of several surveys of passengers' opinions about trains and services are summarized in an article on page 757.

●

CARS COMING UP: Barred almost since the war began from buying new passenger equipment, except some for war-connected use, the railroads just lately have seen this log jam broken by government approval of a program for building 55 cars in one plant. Meanwhile, their pre-war equipment, new and old alike, is running its life away at an unprecedented rate. Some suggestions of the improvements in safety, speed, comfort, and economy of operation that are in store for the day when full production of cars can be resumed appear in the article summarizing recent advances in car design.

●

TRACK AND STRUCTURES: Contributing unobtrusively but indispensably to the records already made and to the preparations under way and planned for the post-war period, the maintenance and engineering forces of the railroads have had their own share of difficulties overcome and advances accomplished, as this issue's review of that phase of the industry's endeavor discloses. Refinements and innovations will pace peacetime needs.

●

HOW THEY DID IT: Again this year railway passenger performance has established new high records. The article surveying some of the year's achievements goes on to describe representative devices that various roads have employed to make this performance possible. Ticket office practices have been geared to the demands of yaster traffic, car utilization has been further intensified, reservation bureau arrangements have been overhauled, station facilities have been enlarged and rearranged, space assignment procedures have been extended, and meal service on trains and in stations has been quickened and simplified. These and other expedients have contributed, along with relentless human effort, to the realization of a potential capacity to produce passenger service never before so tested.

●

PROVED POWER: Developing the idea that "tomorrow's locomotive is running today," this issue's motive power article emphasizes the characteristics that make the engines recently put in service remarkably well adapted to the needs of post-war passenger operations, as they are now shaping up. Research will continue to seek improved designs, of course, but the *new* locomotives now on the road, whether steam, electric, or Diesel-powered, are already showing their mettle, and have demonstrated just the capacity, adaptability, speed and stamina that will be in demand in the difficult traffic situations ahead.

SAFETY STILL FIRST: Despite their preoccupation with the magnitude of the job they have had to do, the railroads have not subordinated to alternate considerations the primary operating principle that safety must not be sacrificed for any other objective, however commanding it may appear to be. The result is a casualty record three times as good for passengers, and twice as good for employees, as the World War I record. No small part of this achievement is attributable to the performance of modern signal systems and C. T. C. installations, which not only supply actual mechanical protection to trains on the road, but add further to the safety of operations both by keeping all trains more regularly in motion and by reducing delays and speed variations that contribute their share of hazards.

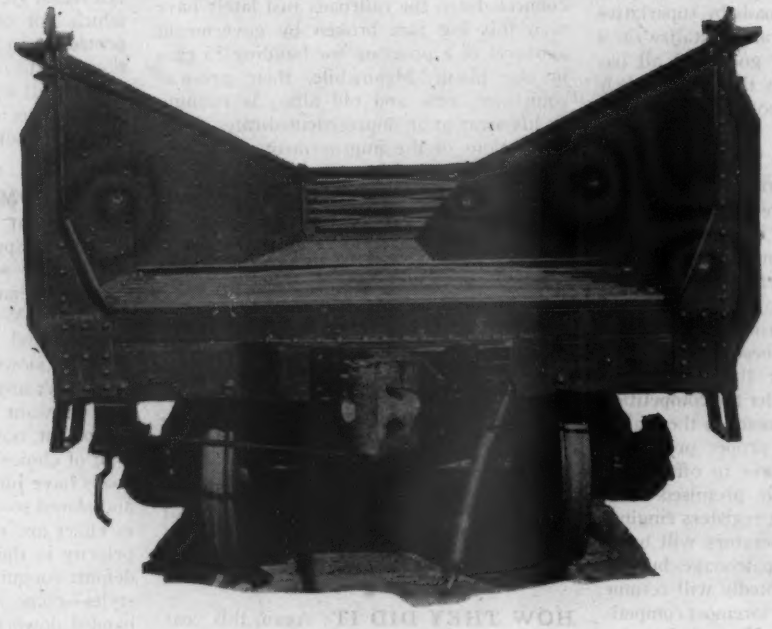
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PHANTOM ORDERS: If their profitable pre-war showing that they have what it takes to appeal to the customers required any further support, the streamliners have furnished that proof in their wartime performance. When paying passengers would rather stand on a streamliner than have seats on slower, less luxurious trains, then there isn't any doubt about what those passengers want in the way of rail passenger equipment, now and when there's more freedom of choice. Seeing such evidence, many roads have jumped the gun on the W. P. B. and placed so-called phantom orders—which in effect are reservations establishing their priority in the builders' plants, rather than definite commitments as to specifications and styles—come the day when the word is handed down to resume full-time passenger car production. Almost a thousand cars of modern design are already bespoken, either on this basis or in the form of specific orders, such as that for five complete trains just placed by the Great Northern for its "Empire Builder."

●

A SALESMAN'S JOB: Underlying the technical developments, the advances in the comfort and appearance of new equipment and the refinements in service and performance with which the post-war customer is to be regaled, is the fundamental concern of management with making the passenger business pay. The leading editorial this week reviews the recent statistical history of passenger earnings, and goes on to point out that, on most roads, elimination of passenger service (assuming it would be allowed) would reduce total earnings more than it would reduce total expenses. Therefore, whether or not passenger business was profitable, before the war, for most railroads, they are faced with the obligation to continue to provide passenger service, and with the necessity of getting all the *revenue* they can out of it. The evidence that most roads are planning a real fight for post-war passenger business is proof of their belief that it *can* be made profitable in peacetime. Success in this fight will depend not only on the physical facilities that they will have to offer, but on the improved techniques of salesmanship with which they offer them.

Dreadnaught
DROP END GATE



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STANDARD RAILWAY EQUIPMENT MFG. COMPANY

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Can Passenger Service Be Made Profitable?

For years before the war the passenger train service of most railways was considered unprofitable. After the war the railways probably will be subjected to increased competition by the passenger automobile and the airways. And yet most railways are planning to make a real fight for post-war passenger business; and they would hardly be doing this if they believed they could not make passenger business pay.

A Larger Total Travel Market

One reason why they are preparing to make such a fight is that probably there will be an increased total traffic to fight for, especially if the nation is prosperous. The airways are expected to be stronger competitors than ever for the business of such travelers as use parlor and sleeping cars; but the railways, by providing more speedy and luxurious service on their best trains, may get a larger share of this business than many now expect. If, however, passenger service on most railways is to be made profitable, this will have to be accomplished principally by rendering a service in coaches that will attract enough passengers who otherwise would use buses or their automobiles, especially the latter.

The Interstate Commerce Commission uses a formula for dividing operating expenses and taxes between freight and passenger train service in an effort to ascertain the profits or losses made in rendering each kind of service. In its preliminary abstract of statistics for 1943 it gives figures showing the net earnings or losses which the use of its formula indicates were made in rendering freight and passenger service in the years 1925-1943, inclusive. Revenues from passenger service in 1925 were $1,427 million; expenses $1,192 million; and net revenues (before taxes), $235 million. These figures indicate that net earnings from passenger service had been larger in previous years, because total earnings from it had been declining since 1920. And in a period of prosperity they continued to decline until in 1929 they were only $1,300 million. Consequently, the ratio of passenger service operating expenses to passenger revenues increased from 83.5 per cent in 1925 to 90 per cent in 1929, and net revenues (before taxes) declined from $235 million to $128 million. Then during the depression total passenger earnings took a nose dive; and in the twelve years 1930-1941, inclusive, the ratio of expenses to revenues ranged from 101 per cent in 1930 to 129 per cent in 1935 and net losses (before taxes) ranged from $13 million to $161 million.

The last operating loss reported by the Commission was in 1941. Its statistics for the years 1941, 1942 and 1943 are given in an accompanying table; also, estimates by *Railway Age* for the first eight months of 1944 based as nearly as practicable on the Commission's formula. These figures include not only net revenues, but also net operating income after taxes.

In 1941 when passenger revenues were $751 million the loss before taxes from passenger service was $105 million and the loss after taxes $226 million. A gain of almost 80 per cent, or $596 million, in passenger revenues in 1942 reduced the passenger operating ratio from 114 in 1941 to 77.7; replaced an operating loss of $105 million with net revenues of $301 million—a gain of $406 million; and also replaced a deficit after taxes of $226 million with net operating income after taxes of $89 million—a gain of $315 million. In 1943, with passenger revenues $2,080 million, the operating ratio declined to 64.77 per cent, and net revenues were $733 million and net operating income (after taxes) was $280 million. In the first eight months of 1944, with passenger revenues $1,464 million the operating ratio increased to 68 per cent, net revenues were $468 million and net operating income (after taxes) was $177 million.

Passenger Service Earnings and Expenses

	Revenues $ (000)	Expenses $ (000)	Net revenues $ (000)	Operating ratio (per cent)	Net railway operating income $ (000)
1941	751,397	856,776	−105,379	114.02	−226,059
1942	1,347,563	1,046,936	300,627	77.69	89,329
1943	2,079,659	1,346,934	732,725	64.77	279,790
Eastern District	821,936	580,432	241,504	70.62	91,536
Southern District	403,648	226,800	176,848	56.19	62,154
Western District	854,075	539,702	314,373	63.19	126,100
1944—First Eight Months	1,463,541	995,596	467,946	68.03	177,148

Need to Double 1941's Gross

The combined figures of 1941 and 1942 indicate that in those years annual passenger revenues of $1,050 million would have produced about $98 million net revenues and after taxes a loss of $68 million. The combined figures of 1943 and 1944 indicate that on the basis of present higher operating costs and taxes annual passenger revenues of $2,140 million would produce about $700 million net revenues and $270 million net operating income.

The figures demonstrate beyond any question that the huge passenger traffic handled during 1942, 1943

and 1944 has contributed largely to the net operating income of the railways after being charged with its full share of all operating expenses and taxes. They also indicate, however, that, on the basis of present operating costs, revenues from passenger service must be about $1,400 million annually, or almost twice as large as in pre-war 1941, to exceed merely the operating expenses chargeable to it under the Commission's formula.

Statistics based on the Commission's formula do not settle whether or not passenger service is profitable. In an industry such as the railroad industry rendering more than one important service there are large *joint* costs; and the vital question regarding the desirability of dispensing with one of these services is: Would abandoning it reduce total expenses more than it would reduce total earnings? There can be no doubt that, as regards passenger service, the answer on most railways would be negative. Hence, on most railways, the problem is to get the largest practicable passenger revenues. This is a problem of both service and salesmanship; and salesmanship (including advertising) as well as service will have to be greatly improved in the post-war years if the largest available passenger revenues are to be secured.

Meet the Customer

In view of mounting passenger revenues, the passenger traffic officers of the railways are now getting more executive attention for their problems and better co-operation from the officers in other departments than was the case before the war on any but a few railways. Such attention and co-operation will undoubtedly project itself to a large extent into the post-war period. Thus, the greater understanding on the part of other officers of the passenger traffic men's problems will undoubtedly result in improved passenger service. The problems of the paying passenger are, however, not so well known to the executives and operating officers as they might be, since such officers are seldom, if ever, paying passengers and, in general, have only a sketchy idea of what happens to such travelers in the course of buying tickets, getting reservations, etc.

A case in point is the fact that passes of even the highest officers of one railway are not good on the streamliners of another railway. This actually serves as a deterrent to the spread of streamlined service, because the officers of the railways not operating streamliners are by no means as familiar with the attractions of such service as the general public.

The war conditions have brought about an abnormal situation, as far as passenger traffic is concerned. Any annoyances of peace-time train travel have been magnified and enhanced. Old and new difficulties and discomforts are present in exaggerated forms. This makes present passenger service a sort of testing laboratory where all the defects are brought into sharp relief. Even so, the full benefit of the lessons cannot be obtained by riding in business cars or in Pullman rooms on passes, with a secretary making the necessary reservations.

The suggestion has been offered—and not entirely jokingly—that all business cars be stored or shopped for a month, that all pass privileges be withdrawn for a similar period, and that secretaries be instructed not to make reservations for their bosses for four weeks. This proposition, although unnecessarily radical, has merit. The president of one transcontinental railway is frequently seen riding an ordinary car on one or the other of his coach trains, and he orders others of his officers to do likewise. It is more than mere coincidence that the passenger service on this road is among the best in the country and that its passenger revenues were mounting steadily before the war. To obtain the maximum benefits, however, such riding by executives and operating officers should not be confined to their own road, where, after all, they are usually well known and are treated accordingly. It should also embrace foreign lines and the officer should buy his ticket and make the trip as an ordinary passenger has to do.

In this way, the executives and operating officers could meet the passenger on some common ground. Already they are giving a more understanding and sympathetic ear to the problems of the passenger officers. This would give them also a greater understanding and appreciation of the problems of their customers—the passengers. Unquestionably, better passenger service would result.

The Nature of the "Passenger Progress"

Passenger progress to the public means improvement in the comfort and style of appointments, the exterior appearance and the smoothness of riding of railway passenger cars. It means the styling of motive power and trains which operate on the fast schedules made so popular by the streamliners. Of course, the smoothness of the ride is determined as much by track conditions as by the character of the rolling stock, and revisions in signaling may play an important part in the day-after-day success with which fast schedules are maintained. Nevertheless, the locomotives and cars which make up the train are the outward symbols of all of these things.

There will be no lack of evidence of passenger progress which the public will understand after the war. Large numbers of old passenger cars will probably be retired as fast as attractive lightweight cars can be built to designs already well established. Progress in design during these years will be in trucks, draft gears, vestibules and details of special equipment to reduce weight or improve smoothness of performance.

The new motive power of the early post-war years, like the passenger cars, will be to designs which some railroads have been using as long as ten years.

Popular anticipation has been built up to some extent looking toward the advent of new materials and new forms of motive power during the post-war years. What the public generally overlooks, however, is that major developments in locomotive or car design take place at relatively long intervals. Thus, the lightweight car designs were developed ten years ago. Diesel locomotives have been performing in passenger service for practically the same length of time. Improvements in steam locomotives which distinguish modern locomotives from those built twenty years ago are refinements in detail, some involving changes in materials, and variations in proportions, which have increased capacity and reduced the frequency with which maintenance attention is required. The real measure of progress under such conditions is the rate at which these new types of construction, refinements and changes in proportions are actually built into the motive power and rolling stock of the railroads. Despite the established character of such equipment, the field for further installations has scarcely been touched.

Engineering progress will also continue. New forms of motive power are either already on trial or awaiting the removal of wartime restrictions to be tried out. But such developments, whatever their ultimate success, will not exert strong influence on passenger-train service for years to come. They will serve immediately, however, to stimulate popular imagination.

How the Railways Have Done It

Statistics given in the accompanying table show how the railways have accomplished what a few years ago would have been regarded as the impossible task of handling with fewer locomotives and cars a passenger traffic which this year is four and one-third times as large as in 1940.

Railway Performance in Handling Passengers

	July 1920	July 1940	July 1942	July 1943	July 1944
Number of passenger locomotives	13,562	7,306	7,017	6,823	6,794
Number of passenger-carrying cars	41,564	27,592	27,706	27,902	28,545*
Passengers carried one mile (thousands), average daily	154,871	72,374	153,693	269,958	280,830
Pass. train-miles, average daily	1,568,000	1,082,000	1,159,000	1,282,000	1,297,000
Pass. train-miles per locomotive, avg. daily	116	148	165	188	191
Passenger-carrying car-miles, average daily	7,008,000	4,892,000	6,271,000	7,967,000	8,272,000
Average miles per pass. car daily	168	177	226	285	290
Average pass.-carrying cars per train	4.5	4.5	5.4	6.2	6.4
Average passengers per car	22.1	14.8	24.5	33.9	33.9
Average passengers per train	98.7	66.9	133.0	210.5	216.4
Average trip per passenger (individual railway)	41.9	57.2	79.2	98.6	102.4
Passengers carried one mile per locomotive, average daily	11,419	9,906	21,903	39,566	41,335
Passengers carried one mile per pass. car, average daily	3,726	2,623	5,547	9,675	9,819

* Estimated.

Passenger cars carried an average of 14.8 passengers and moved 177 miles daily in July, 1940, as compared with carrying 33.9 passengers and moving 290 miles daily in July, 1944. Hence, the number of passengers carried one mile per car averaged 2,623 in 1940 and 9,819 in 1944. Each passenger locomotive on the average pulled trains 148 miles daily in 1940 and 191 miles daily in 1944. Average passengers per train in 1940 were 66.9 and in 1944 were 216.4. Hence each passenger locomotive carried an average of 9,906 passengers one mile daily in 1940 and an average of 41,335 passengers one mile daily in 1944.

The achievement of the railways in handling as safely and well as they have the vastly increased military and civilian passenger traffic of World War II will always rank as one of the greatest achievements of this war period.

Tracks and Structures

As the railways face the remaining period of the war, no matter what its duration, and as they look ahead with increasing interest to the post-war problems of passenger transportation, they need have little concern about the ability of the tracks and other elements of the fixed properties to meet the demands that will be made upon them, provided those charged with responsibility for the adequacy of these facilities are given the necessary materials, labor and equipment to make and keep them adequate. Those on the railways charged with this responsibility have demonstrated, both prior to and during the war, that they know what is demanded of the tracks and other structures by high-speed, dependable and safe rail transportation, and to the extent that they have failed to contribute to this type of transportation to date, it must be charged largely to the fact that they have been deprived of the requirements essential to that end.

Railway engineering and maintenance officers, while alert and eager to develop and adopt advanced designs, materials and practices, are convinced that, basically, they have at hand the means to meet any reasonable demands for improved high-speed train operation—that they can build to meet whatever the operating department may require in the way of loads, speeds or traffic density.

Questions that concern these officers most are the economic factors involved, the large investments that will be required to rehabilitate, strengthen and refine the thousands of miles of tracks over which the high-speed trains are to be operated; and not only the large initial investments, but the higher costs of maintaining these tracks to the more exacting standards that will be required despite the greater abuse and wear of high-speed operation.

Looking ahead, therefore, every engineering and maintenance officer confronted with the prospect of increased train speeds is considering first those elements of design and construction that will hold down con-

struction costs, but more especially those elements of design and construction that will contribute to greater permanence, and thus lower routine maintenance costs. They accept the responsibility in this regard, but at the same time they must have the closest sympathetic co-operation on the part of the operating and mechanical departments in avoiding any unnecessary burden on the track in the interest of safety and economy.

Of the operating department, they ask that shorter train schedules be sought first to the greatest practicable extent through better balanced schedules, with higher average speeds, rather than excessive top speeds. In asking this, they realize that the work of their own departments must interfere with train operations to the minimum extent, but they believe that much can be done by the operating department to hold down top speeds, while accomplishing the same results by the more careful road dispatching of high-speed trains and by better assignments or handling of head-end work at stations.

Of the mechanical department, the engineering and maintenance forces ask that all high-speed equipment be designed for the maximum speed at which it is to be operated, and, equally important, that no equipment of any kind be operated at speeds beyond those for which it is designed. Furthermore, in the interest of safety, minimum abuse to the track and economy, they ask that greater consideration be given to the means of transferring equipment loads to the track, and that closer attention be given to general wheel conditions. Even with such co-operation, the roadway departments of the railways will have plenty of problems in meeting the requirements of the post-war speeds that are being talked of today by railway managements and traffic officers. Without that co-operation, these problems will be greatly magnified, and what is more serious, roadway costs will be greatly increased.

The Problem of Sleeping Car Service

One of the most important problems with which railway managements are confronted is that of providing satisfactory sleeping car service. A federal court has held under the anti-trust act that Pullman, Inc., must retire from either its sleeping car business or its car-building business. Pullman, Inc., has elected to retire from its sleeping car business, and has suggested that the railways take it over.

Sleeping car service is so essential that it will have to be provided either by a new independent company or by the railways. The railways could provide it themselves by each railway providing its own; or by some railways providing it for themselves while the rest provided it by a company they jointly owned; or they could provide it for all railways by a company jointly owned by all, as is the Railway Express Agency.

The *Railway Age* believes as strongly as anybody in competition, and, when necessary, in government enforcement of competition in naturally competitive industries. But there are some businesses that are natural monoplies which should be subject to special regulation; and we consider the furnishing of sleeping car service one of them. Until within recent years some railways provided their own sleeping car service, the last to abandon it being the Milwaukee and the New Haven. The service passed completely into the hands of Pullman because experience indicated that a single company could render it better and at less cost for the railways as a whole than they could render it for themselves. The principal reason is the seasonal nature of travel. When, for example, vacation travel is heavy to California and Florida, it is light to northern Wisconsin and Michigan, Canada and New England, and vice versa. Hence a central pool of cars upon which each railway could draw in accordance with its fluctuating needs seemed to make it possible to provide the total annual service and all the kinds of service required with the minimum practicable investment and expense.

And, paradoxical although the statement may seem, Pullman's monopoly did not prevent competition. For each railway desired to render better sleeping car service than competing railways. Hence Pullman was under constant pressure to supply each railway with new and better cars. Also, both the railways and Pullman have been subject during the last quarter of a century to severe airway and highway competition; and there was great improvement in sleeping car service even throughout the depression.

After the war the railways will be subjected, especially by the airways, to severer competition for the class of passengers who have traveled in sleeping cars than ever before. If they can meet this competition, it can be done only by providing faster service throughout the country than ever before on trains equipped with sleeping, club, parlor and observation cars affording more comfort and luxury than the best ever heretofore built. Competition by the railways with each other will hardly be necessary to cause the required improvements in service, because the competition of other carriers will give them plenty of stimulation. It seems certain that competition by the railways in rendering sleeping car service would cost them much more than having it rendered by a single company that was independently owned or jointly owned by them; and it seems very doubtful that the railways separately would render any better service than a single company.

The selfish interests of the various railways will be difficult to reconcile because these interests appear to be widely different. But all railways are answerable in the long run to the same national public sentiment; and their real problem is to provide the kind of nation-wide sleeping car service that will best satisfy all travelers using or disposed to use such service.

COMPETITION *of the future*

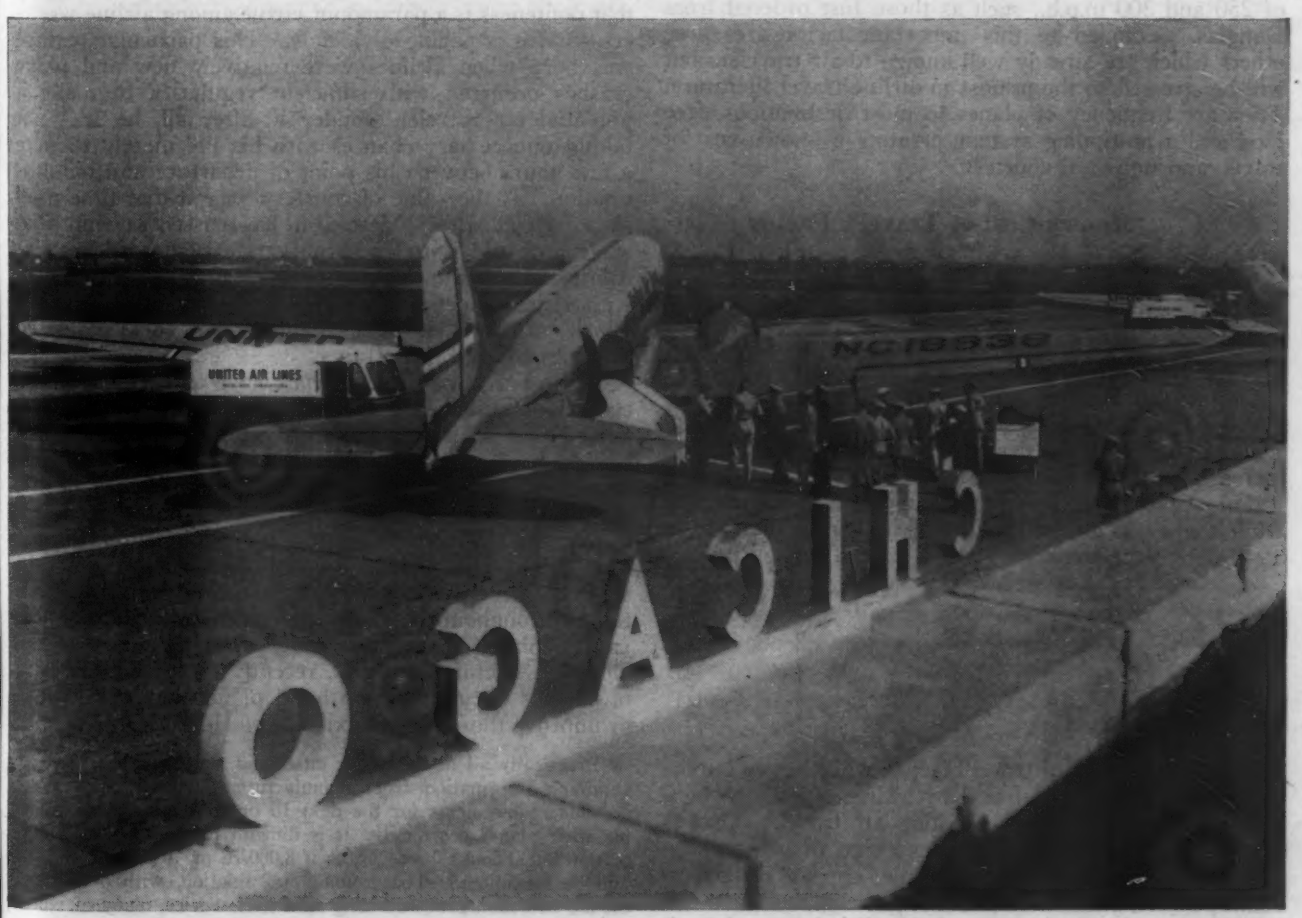
What the railways face in attempting to retain as much of the present heavy passenger traffic as possible

BEFORE considering the railways' program for meeting the demands for passenger service of the future, the problem of what they will have to face in the way of competition must be considered in all its phases. Just how much will airplane travel cut into the business, particularly in first-class travel? How will mass transportation on the rails be affected by the buses and by private automobiles? These are the questions that arise and on which answers must be obtained before any safe and reasonably certain estimate of railway passenger travel of the future can be prophesied. Manifestly, it is of no use to the railways to spend large sums in modernizing their passenger service if they already have three strikes on them before they start. This, however, is by no means the case, according to information received from railway executives vitally interested in passenger business and corroborated by a survey of competing passenger transportation agencies conducted by the *Railway Age*.

The competition will be tough, backed as it will be by government subsidies and by some of the best promotional and sales talent in the country. However, the railways, by astute promotion and sales efforts on their own behalf, and the use of what advantages they have, particularly as to comfort, are in a splendid position to wage a successful fight for future passenger traffic. There is no use in minimizing the future competition. As fast as reconversion can take place, the fight will be on for the traveler's dollar. The railways, though, by means of the determined and intelligent efforts they intend to make, and the weapons at their disposal in the way of modern, streamlined trains, are in a strategic position to hold on to much passenger traffic.

With the coming of peace and the beginning of post-war travel, the railroads will find themselves faced with some of the toughest and best-prepared competition in their history by the airlines. The railroads, while far from idle themselves in preparing for the future, will have impressed upon them the fact that their competitors have not only attempted to maintain whatever advantages air travel offers over rail travel, but have gone a few steps farther to extend and add to these advantages.

An illuminating factor of the air lines' determination to maintain their fight for a place in the passenger transportation sun is a report, recently released, that three of



The Airplane Companies Are Planning a Vast Expansion of Their Services

the major airways have placed orders with the Douglas Aircraft Company for 93 four-engine airliners which are to be built at a total cost of $50,000,000. According to the statement, which was issued jointly by American Airlines, Pan-American Grace, and United Airlines, the three purchasing companies, the order calls for delivery of 25 Douglas DC-4's and 30 Douglas DC-6's to American; 3 DC-6's to Pan-American Grace, and 15 DC-4's and 20 DC-6's to United. To carry the figures a bit further and thereby reveal a fact of significance to the railroads in these days of demand for more and more speed, the DC-4 is a 4-mile-per-minute, 44-passenger and cargo plane, while the DC-6 travels five miles a minute and carries 56 passengers and cargo.



Buses Styled by Raymond Loewy Are Expected to Be Attractive to Future Passengers. If Priorities Permit, Some of These Will Be Ready for Road Tests in 1945

Apart from the natural tendency to purchase newer and better equipment, the air lines will offer other and varied forms of competition, which airline operators and plane manufacturers believe will help to attract the traveling public to the air and wean them away from rail travel. Indicative of this is the promise of greater speeds by the purchasing of planes capable of traveling at speeds of 250 and 300 m.p.h., such as those just ordered from Douglas. Coupled to this important factor are three others which are already well known to air travelers but will be stressed to the utmost in airline travel literature. They are frequency of planes to most destinations, free food and a no-tipping system, creating a known cost of travel, and universal courtesy.

"Known-Cost-of-Travel" Factor

For many years, even during the difficult war period, the airlines have steadily increased the number of their plane schedules, although demands of the armed services for civilian planes in recent times have considerably curtailed this particular phase of airline operation.

Despite this lending of equipment to the armed forces, statistics released by the major airline companies reveal that daily flights, while decreasing in some instances, have increased in others in the period between 1940 and 1944. Taking Chicago as a typical example, it is shown that while there was a total of daily flights out of that city in 1940 of 78, the total for 1944 is 85. The figures are:

	Oct. 1940	Oct. 1944
To New York	33	27
To Boston	10	5
To St. Louis	9	10
To Kansas City	12	12
To Denver	4	10
To Los Angeles	5	9
To San Francisco	5	12
Total	78	85

The "known-cost-of-travel" factor, while not so important in itself, has been found by airline officials to be a worth-while incidental in boosting air travel. That is why it was adopted and shows no sign of being abandoned. Plane passengers, as a rule, are not obliged to count pennies, but then neither are passengers aboard our first-class trains, yet it cannot be denied that good food, well served by workers who will not accept tips, gives air travel a certain amount of prestige which eventually reacts in favor of the airline companies, and is not to be overlooked when considering competition in all its forms.

Air lines have leaned over backwards in emphasizing to their employees the cheapest commodity available, namely, courtesy. Plane crews, ground crews, ticket agents and all others are drilled to remember constantly that politeness is a paramount virtue among airline workers—and it is paying dividends. This particular feature was born when airlines were relatively new and plane crashes occurred with sufficient regularity to make a potential air traveler wonder if, after all, he was not taking unnecessary chances with his life merely to save a few hours between his point of departure and his destination. If the value of courtesy was at that time used as a psychological sedative, it has passed beyond that stage now and is today a rule strictly enforced because it breeds friendship between airlines and their passengers with a consequent and natural increase in travel revenue which might, other things being equal, be available to the railroads and their trains.

While but few airline officials have as yet prophesied reductions in plane travel fares after the war, no one has denied that such a move is contemplated. Despite the high cost of operating a plane or a fleet of planes, it is quite feasible that the major airlines can, if they desire, make drastic cuts in fares if such an action becomes necessary. In this connection, too, it is illuminating to note that many of the airlines are confident of receiving subsidies, other than monetary, from states and cities and towns throughout the country in return for including these various places in the line's route. R. J. Pfeiffer, of the Douglas Aircraft Company, recently spoke of the desire of various communities to build plane landing runways or improve those now in existence. He said in part:

"Practically all of the major cities and many smaller ones are obtaining information from manufacturers and air lines as to possible requirements for the next 10 or 20 years and are making their plans accordingly. It is difficult to work up the information but it looks, however, as if 8,000-ft. or 10,000-ft. runways will be maximum." That commercial aviation, with or without the aid of communities desiring air travel service, many of whom have been told that they will be made "the air travel center of the universe", is preparing to take a number of huge bites out of

railroad revenue, is stressed by statements of airline officials and others concerned with the industry, which have been embodied in a study of air transportation, conducted and reported by the Association of American Railroads.

L. Welch Pogue, chairman of the Civil Aeronautics Board, told a meeting at New York that, while confining himself to a forecast of only a decade or more, he saw the eventual possibility of 50 billion passenger-miles by air, and possibly half a million planes of varying sizes to handle domestic cargo needs. He also declared that in the United States the airplane will become the *preferred carrier for intercity travelers.*

Private Planes

Croil Hunter, president of Northwest Airlines, predicted that air passenger rates would be reduced to 3 cents per mile or even less; that air cargo rates might be 15 cents or even 10 cents a ton-mile, and that he foresaw 25,000 to 30,000 cargo planes in operation.

Eugene Wilson, former president, United Airlines, said:

"Every returning pilot and each member of his crew will be absorbed into a completely independent world. They will find an aviation industry through which they can emancipate the whole world from earthbound travel. Unlike the automobile, the airplane was designed for military purposes and *has not as yet been fully adapted to private use.*"

In this connection it should be remembered that still another branch of aviation has become a big boy now, and promises after the war to grow into a formidable giant to harass railroads and their revenues. This is private aviation which deserves a paragraph or so to itself. For many years it was conceded (regardless of the truth or falsity of such a theory) that only a chosen few were endowed with superman qualities which were believed vital necessities of those who would fly above the earth. Even commercial pilots made it a point to keep their abilities shrouded in mystery, with the result that the superman legend grew and hundreds of would-be and embryonic aviators gave up, decided that flying was not for them, and that, after all, the good old railways were their chief mode of travel.

In recent times all that has changed. Manufacturers of small civilian planes have plunged into a formidable educational program designed solely to prove that practically anyone can fly with perfect safety. One such manufacturer has even adopted a slogan to the effect that "we can teach you to fly from 6 to 60" or words to that effect. Added to this is the comforting fact, for would-be aviators, that many planes have now been designed and incidentally have been flying for many months, which, with reasonable handling, are practically foolproof.

Two of the chief bugaboos of civilian flying have been so thoroughly mastered that they are not even considered hazards any more. They are take-offs and landings; two operations which brought most grief to flyers because of the once-necessary high speed required for such maneuvers. Today there are small planes, carrying one or two passengers, capable of taking off or landing at a speed no greater than 35 to 40 m.p.h. With the elimination of these high-speed hazards the plane manufacturers more than doubled their sales advertising, with the result that boys, men, and even elderly men and women have learned to solo and put in their required number of hours to obtain a private license.

Drawbacks and Advantages

On the credit side of the ledger, however, insofar as the railroads are concerned, is a list of nine major drawbacks to air travel, which the Railroad Committee for the Study of Transportation of the A. A. R. incorporated in its recent report mentioned elsewhere in this article. They are: (1) Overcoming fears of family or employers; (2) possibility of cancellation or delay; (3) advance reservations a necessity; (4) reservations from off-airline points; (5) undependable time of arrival; (6) time and cost to airport; (7) limitation of baggage weight without substantial excess charge; (8) air sickness and other discomforts; (9) additional hotel bills.

To which the airlines offer in rebuttal the following alleged advantages, in addition to the four mentioned in the beginning of this article, which the railroads must somehow meet:

(1) Probable saving in cost; (2) round-trip reductions; (3) issuance of credit cards; (4) bus and taxi service; (5) free parking at airports; (6) alternative routings; (7) prestige of air travel; (8) avoidance of undressing en route; (9) direct service without change.

In spite of all the pros and cons, speed is still the greatest selling factor of the airlines, as the A.A.R. transportation report aptly points out in the following words: "Speed of air travel is its major inherent advantage over competing surface agencies. To match this advantage, competing agencies must offer advantages in surface operations which will serve as a counterbalance. The advantage of speed in air travel is permanent, and likely to increase in importance."

Buses Will Improve

Motor bus lines and manufacturers of equipment used by them have not overlooked the fact that post-war travel, regardless of the type, will demand better and faster schedules, whether inter-city, inter-state or transcontinental. Indicative of this phase, insofar as motor coach lines are concerned, is a recent statement of F. R. Fageol, president of the Twin Coach Company, who in speaking of the 1945 line of buses his company will offer, said in part:

"Through the necessities and contingencies of war, the tempo of all transportation is being stepped up in a manner which will make old standards obsolete and a dim memory. Therefore, the power ratio to weight, the smoothness of operation, the riding qualities, the styling, the rider appeal, and the economy of operation into such a vehicle should contemplate the environment of competitive transportation advancement during the coming decade."

Bus transportation across country has usually been less expensive than that of railroads or airlines, partly because a high percentage of bus riders must perforce economize by reason of their financial status, and partly because there are certain discomforts embodied in that particular method of transportation which do not exist in other modes of travel. Should the bus lines overcome some of the major objections to bus travel, such as the cramped seat space and lack of toilet facilities, there is reason to believe that another bite into the railroads' revenues may result. Especially is this true if bus lines work toward the end of operating on faster schedules and a higher frequency of service.

The bus lines and those who manufacture their coaches have made no secret of the fact that such is their intention, and that in all probability the "comfort angle" will be the first consideration in attempting to make traveling America bus-conscious. The second will possibly be a reduction in fares. The factors of (1) increased comfort and (2) faster schedules work hand in hand because they add up to the total of less discomfort to be endured for a shorter length of time. To this end many of the bus lines have already drawn tentative plans which visualize the bus of the near future as a vehicle designed to offer facilities completely new to the bus traveler. These improvements include toilet facilities, more lounging space,

air-conditioning, individual seat lighting and a special type of glass which will cut 28 per cent of heat received from sun rays. Solely from the mechanical aspect of travel improvements, at least one motor coach manufacturer is already offering (for 1945) one-motor coaches capable of carrying from 32 to 38 passengers, and a two motor vehicle built to transport from 41 to 45 riders.

The Greyhound lines has gone even farther in advertising post-war offers of better transportation facilities for the bus rider. This company has announced a new bus, capable of carrying more than 50 passengers, and expected to reach hitherto unattainable speeds due to special construction features which include an air-cooled Vultee engine. This vehicle, the company claims, eliminates most of the objectionable features of previous bus travel, being equipped with wider seats, deeper cushions, and more space between the seats to provide greater relaxation and freedom of movement. Another sales feature which will be whipped up in the company's advertising is the fact that the coach will be made up of three compartments, one of which will include toilet facilities and can be used for sleeper accommodations or even as a buffet or smoking lounge.

Further proof that the bus transportation business has not been marking time is a statement made recently by Elmer Jenkins, national travel director of the American Automobile Association, and one which various bus lines are incorporating in their post-war advertising plans. Mr. Jenkins said in part:

"The federal government, together with the states, will embark upon a highway construction program that will surpass anything yet built—new multi-lane highways that will permit speeds of 100 miles per hour. The completion of this system will give a tremendous impetus to automobile travel, particularly long distance travel . . . and would permit the motorist to reach most any objective in half the time now required."

Taking a leaf from the book of recent railroad improvement experimentation, the National Association of Motor Bus Operators has announced plans to establish a bus-to-bus radio communication and, as part of such a program, has already petitioned the Federal Communications Commission for the assignment of 15 radio wave bands to the motor bus industry. While railroad experimentation along that line is being conducted principally as a safety measure, the use of radio on buses and bus routes is being advertised as an up-to-date means of facilitating passenger travel, minimizing delays in the event of road failure, the expediting of repair and maintenance work and the promotion of safety.

The Private Automobile

As was the case before the war, the private automobile will represent a far greater menace to railway passenger revenues after the war than any other form of competition. However, the extent of such menace is dependent upon so many imponderables that it is virtually impossible to give more than a sketchy outline of what the future will be. In the first place, there is no certainty as to how long it will take for the automobile manufacturers to reconvert from war-time to peace-time production. At a recent meeting in Detroit to consider this subject, a wide divergence of opinion was prevalent. The lowest estimate given was that it would take six months for the reconversion process. The number of new passenger automobiles that will be sold after the war will be dependent, of course, upon the rapidity with which the automobile manufacturers can reconvert, but it will be dependent perhaps even more on the financial condition of the country at the time and further, to a larger extent than is generally realized, upon the condition of existing



United Air Lines Photo

The Skyways Will Be Much Busier with Civilian Traffic After the War

automobiles at the time the war ends and whether or not the government releases any great number of Army and Navy vehicles for public sale.

In a certain sense the highways of the country will also have to be reconverted. In other words, when inter-city passenger automobile traffic fell off to a mere trickle by comparison with peace-time usage of the highways, the mortality among gasoline stations, tourist camps, restaurents and all the other enterprises that catered to the traveling motorist was terrific. Before any great amount of automobile travel can be accommodated on the highways without congestion at the few such facilities still available, many new enterprises will have to be started.

There seems to be no doubt whatever but that the government will embark immediately after the war upon a grandiose scheme for highway improvement and for the building of super-highways, of which the Pennsylvania Turnpike was an outstanding example before the war. In addition, plans are well under way for having such super-highways avoid city traffic to a very large extent, which will afford additional inducement for long distance motoring, since the speed and comfort of such motoring will be materially enhanced by the avoidance of heavy, time-wasting city traffic.

The matter of gasoline and tires also enters the picture in a most important way. From all studies made by experts in the petroleum industry it appears that the gasoline shortage will end virtually on the day that the armistice is declared to end the war finally in both the European and the Pacific areas. Unquestionably, too, the problem of restoring the transportation of gasoline largely by truck to the outlying gas stations will afford no difficulties and a prompt solution is to be expected.

As to the matter of tires, there seems little doubt that motorists will return to natural rubber tires as against the present synthetic product as soon as such rubber is again available. However, it seems likely that when the Japanese are driven out of Malaya, they will do all they can to destroy the agriculture and industry of that country and undoubtedly will inflict much serious damage on the rubber plantations. This will restrict the output of natural rubber for perhaps three or four years and, in general, indications are that the tire situation will take longer to return to normal than the gasoline situation.

This resumé of the competition the railways will have to face in the future does not indicate that they will have a walk-over by any means in holding on to a large portion of their present passenger traffic. To offset this, however, the railways are taking an intelligent and well planned course of action leading to making railway passenger travel as attractive as possible, which means that it will be faster and more comfortable than ever before. In addition, if the experience after the last war is any criterion, there will be a huge passenger travel market available after the war, and even if all the other agencies should increase the business they were doing before the war, there would still be plenty of traffic for the railways.



A Return to the Uncrowded Dining Cars with Deft, Speedy Service and Attractive Menus Will Be a Must

passenger SERVICE *of the future*

High speeds, greater comforts, and a wide variety of ancillary conveniences are planned for the peace-time traveler

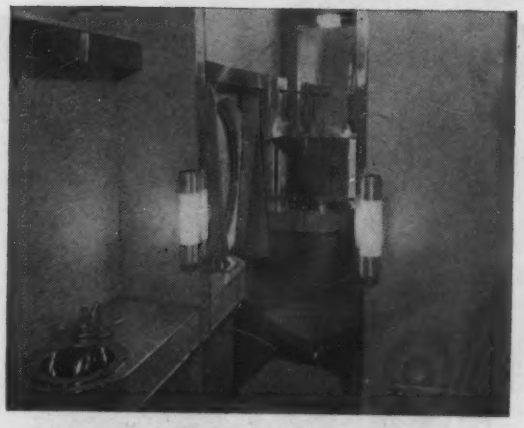
IF experience following World War I and the prophecies of most economists as to what will happen after World War II may be accepted as criteria, the total travel market of the future for carriers by rail, highway and air will far exceed any that has previously existed. The plans of competitors of the railways for attracting the peace-time travel dollar have been outlined in a previous article in this issue. The plans of the railways as given in this article do not, by any means, suffer by comparison. They include first, and most importantly, the provision of the types of service that passengers want, as developed in a number of surveys conducted by the railways and the railway passenger car builders, and through research conducted by committees appointed for that purpose by the Association of American Railroads.

What the Passengers Want

The desires of the passengers are many and varied, but, in a general way, they follow a pattern, in that they include an increase of the comfort and luxury advantages of train travel as compared with air travel, and an increase in the speed advantage possessed by trains over highway travel. In competition with the air, the railways have a potent weapon in greater safety and in luxurious all-room types of sleeping accommodations which are being developed to a point where some of them, such as the duplex roomettes, may well be priced as low as present lower berth charges. To compete for mass transportation against highway competition, the railways have an existing and proved "best seller" already at hand in the high-speed, one-class, all-coach streamliner, with club facilities. It is probable, too, that, in addition to increasing the speed of passenger train schedules, many of the annoying delays at stations will be eliminated by running separate trains, wherever possible, to take care of the head-end business, such as mail, baggage and express.

Also, when the peace-time train traveler makes his journey, he will be able to take his automobile along cheaply and conveniently, or to hire a car under railway auspices at his destination, if he prefers. His vacation trip can also be financed by railway-affiliated companies and payment made on the installment plan. His heavy baggage will be checked through from his home to destination in a much more convenient manner than is now possible. The experiences of the war years will be applied to peace-time practices to the end that buying tickets, making reservations or obtaining ticket refunds will all be much simpler processes than they were before the war.

Importantly, it is most unlikely that passenger traffic officers will ever again assume the status of "orphans", which far too many of them had in the days of declining passenger revenues. The earnings made by passenger trains in the last few years have shown even the most recalcitrant executive the possibilities inherent in the



Better Wash-Room Facilities Are Voted for by Women Passengers

passenger business. Surveys made by the *Railway Age* and the Pullman-Standard Car Manufacturing Company both show unmistakably a keen and intelligent interest in and study of future passenger business by executives everywhere, such as existed previously on only relatively few railways.

The work of the passenger service research committee of the A. A. R. is still in its early stages, but the program already outlined gives promise of developing much valuable and needed knowledge. This work will cover the entire field of passenger service. Practically all of the important passenger-carrying lines have conducted more or less comprehensive studies as to what the passenger will want, the most comprehensive of these being that of the New York Central, discussed in detail later.

The Boston & Maine has adopted a scientific approach to the seating problem by setting up a specially-designed chair in the main concourse of the North Station, Boston. Under the direction of Dr. E. A. Hooton, head of the department of anthropology, Harvard university, thousands of passengers have sat in this chair to be measured, with the idea of fitting railway seats to the public, instead of the reverse. The Southern has employed the Opinion Research Corporation to make general surveys and also specifically with regard to passenger service. The most recent survey of this kind was conducted by representatives of the Edward G. Budd Manufacturing Company in October, 1944, the results of which are also summarized in this article.

New York Central Survey

Through a research organization the New York Central arranged for the distribution of over 5,000 attractive pamphlets to passengers on its newest coaches, requesting information as to their preferences in railway travel. In view of the fact that this questionnaire required from 15 min. to half an hour to fill out, the average of 88 per cent of the passengers who answered each of the many questions indicates the interest of the public in railway travel. The first question asked was with regard to seating facilities, and individual reclining seats received the vote of more than 90 per cent of the passengers. Many of the travelers, particularly men, would prefer more leg room; 76.6 per cent would like a folding arm between the seats, while only 13.4 per cent said they would not like it; 38 per cent preferred the tilting angle board type of foot rest and 28.8 per cent voted for the roller bar, while



More and Less-Crowded Club Facilities Are Desired by the Customers

a shelf supporting the lower legs failed to arouse enthusiasm among the passengers.

The median temperature in the coaches during the survey was 74 deg. and a majority of passengers stated that this was just right. The majority also indicated they were willing to have the temperature varied according to the outside heat on days of extreme heat. A decided preference was shown for broad windows—72.3 per cent against 19.6 per cent for the narrower individual windows; 38.7 per cent favored the standard pull-down type of shade, 29.5 per cent favored the venetian blind and 25.2 per cent favored curtains that slide from the side. Push type door handles, plate or bar, were strongly preferred.

About 7 out of 10 men and 4 out of 10 women stated that they were smokers and that in their opinion the best solution to the smoking problem is to have a small smoking lounge in each car. The lights in the new coaches were stated to be just right as they are, and the present system of ticket collection and the use of identification checks for seats were also voted satisfactory. About 31 per cent of the passengers stated they would like to see faster schedules.

Coach Seat Reservations Desirable

That these particular passengers prefer to have their baggage in the coach with them is shown by their preferences for the overhead luggage rack and the luggage compartment at the end of the car. The overhead luggage rack was also preferred for handling the coat problem. Women passengers tended to favor the compartment at the end of the car for their luggage and also to consider the robe cord equal in preference to the overhead rack for handling their coats. Seat reservations in coach trains are desirable to 82.5 per cent of the people interviewed, while on trains where seats were reserved only 8.3 per cent voted against such reservations. On the other hand, on trains not having reserved coach seats, only 41.3 per cent expressed preference for reserved seats while 45.2 per cent did not favor such an arrangement.

The use of a public address system on trains received the vote of 69.6 per cent of the passengers and an evaluation of various services indicated that the provision of a coach porter is twice as popular as the use of stewardesses and about three and one-half times as important as supplying maid service. The majority of the passengers, particularly the women, definitely prefer soft, subdued color effects inside the coaches, while stainless steel outside finish was preferred by 57.4 per cent as against 13.8 per cent for another New York Central standard of light gray with white trim and 3.1 per cent for the other standard of dark green with a yellow trim, while the remaining 25.7 per cent expressed no opinion.

The passengers voted for radios in the coaches, but indicated a preference for individual receivers and also for restricting the programs to news and sports events. Most of the passengers would like to have sandwiches, coffee, etc., sold on the trains but not by vendors passing through the coaches.

What the Passengers Like

The entire result of the survey indicates that the coach traveling public does not desire extreme or radical design in future railway coaches. The passengers are conservative and indicate that the equipment produced just before the war is highly desirable in their opinion.

A survey made by the Edward G. Budd Manufacturing Company in October of this year developed interesting and pertinent information. The trains on which the questions were asked were the Champion of the Atlantic Coast Line, the Jeffersonian of the Pennsylvania, the Pacemaker of the New York Central, the El Capitan of the Atchison, Topeka & Santa Fe, the City of Miami of the Illinois Central and the Southerner of the Southern. These surveys indicate that recommendations from friends, high speed, the reserved seat feature, comfort and cleanliness were controlling features in determining the passengers' choice of these trains. In response to a question as to whether or not the passenger realized the amount of money saved through the use of an all-coach train, the answer of a large majority was in the affirmative. However, peculiarly enough, virtually nobody admitted that economy was the reason for riding such trains.

The comfort of the seats and the assurance of having and holding a seat for the entire journey were mentioned favorably by a large majority of the passengers. The ability to get a seat will, of course, not be a factor after the war, but the comfort of the seats will remain a selling point. The passengers enjoy also the unrestricted use by persons riding in coaches of the club car and other recreational facilities on these trains. They liked the smoothness of running and also the bright, cheerful interior decorations of the trains. Some of them stated that they derived a distinct sense of luxury and well-being while riding on coach streamliners. The air conditioning and the spaciousness of the wash rooms came in for much favorable comment. The spirit of good fellowship and the meeting of congenial people were commented upon by many of the passengers.

The passengers were very definitely conscious of the outside appearance of the neat and contoured designs. More than one of them described the lines of the trains in question as being sleek and smooth and giving the appearance of unusual speed. They were very conscious of the fact that there were no protrusions and that the cars seemed to fit closely together into a composite whole. Most of the passengers enjoyed having radios in the cars, but the minority who did not want them were very positive in their dislike of them.

What the Passengers Do Not Like

In the course of the Budd survey the passengers were encouraged to complain as to any features of the trains or of the service which they disliked. In analyzing the results it must be borne in mind, of course, that a large part of the criticism of the service deals with conditions brought about by the war but even these conditions have their lessons for railway passenger service of the future. Many war-time defects in service are simply exaggerations of conditions which sometimes prevail in peace-time.

Among the objectionable features mentioned were the following, not necessarily in the order of their importance. Passengers in the new streamlined trains object quite strongly to any lack of cleanliness and this is particularly true of women passengers, many of whom claimed that the wash rooms were not cleaned sufficiently frequently. There were frequent complaints that the temperature at night was not kept sufficiently even, ranging from too hot to too cold within the space of a few hours. Many of the men complained that there was not sufficient leg room between the seats, while several of the smaller women stated that the footrest was too far away for them to reach. On trains that did not permit smoking in the coach seats, there was much complaint against this prohibition; although on trains where such smoking was permitted there was also complaint from non-smokers. There was some complaint



Passenger Representatives, Particularly for the Comfort of Women and Children, Will Be a Feature of Future Trains

that the lights were turned on too early in the morning.

Suggestions made as to the passengers' preference for post-war travel indicated a desire for larger club car facilities as, with full trains, the present facilities are not adequate. The installation of shower baths for trips on all-coach trains lasting two nights, and the establishment of a nursery car supplied with facilities for taking care of young children were suggested. The passengers were also in favor of low cost, relatively simple meals as against more elaborate menus at higher prices. A desire for stewardess and maid service was also frequently expressed.

The women who were questioned were much more interested in wash room facilities than were the men. A suggestion was made that some provision be installed for holding women's handbags while they were washing. In general, too, the women were much in favor of larger wash room facilities. Many of the men voted for a removal of the leg rests so that they could stretch their feet under the seat in front and perhaps the most frequently expressed wish was for more leg room. About 40 per cent of the passengers stated that they would use the train if they had to sit up two nights and more than 75 per cent voted in favor of checking their baggage through rather than keeping it with them. About 80 per cent voted for a large window and a like number voted for individual shade control.

Reaction to One-Class Train

A considerable enthusiasm was expressed for the one-class type of train and the reasons advanced included the following. "There are no restrictions as to where you can go." "Everybody shares facilities alike and has the same privileges." "Class distinction on the same train in America is bad taste." "Equipment should not be mixed but should either be all-coach or all-Pullman." "Differentiation between coach and Pullman passengers is not democratic." "Passengers are more friendly on a one-class train." "Puts everyone on an equal basis." "Service is much better for coach passengers on a one-class train."

A significant feature was the relatively large number of passengers who stated that they could make no comparisons because they had never ridden in other than a one-class train. In the final analysis of all the opinions, the one-class train was given strong preference by about 92 per cent of the people questioned.

Sleeping Car Service

Any consideration of passenger service of the future must take into account the sleeping car business, the future of which has been rendered most uncertain because of the decision in the anti-trust suit against Pullman. Several months of litigation between the government and Pullman, Inc., in the U. S. District Court came to a temporary end in October when, after a series of hearings by a special three-judge court, Pullman, Inc., notified the court that it had decided to sell its sleeping car business and retain its railroad car manufacturing activities, in compliance with an anti-trust decree entered on May 8. The reason that the litigation is apparently only temporarily ended is that a number of hearings by the court must still be held to determine the future operation of sleeping car service.

The government's anti-trust suit against Pullman resulted in a three-judge court at Philadelphia, ordering Pullman, Inc., to separate its sleeping car business, operated by its subsidiary the Pullman Company, from its manufacturing business, conducted by its subsidiary the Pullman-Standard Car Manufacturing Company.

On July 8 the Board of Directors of Pullman, Inc., notified the court at Phaildlephia that it had decided not to appeal to the Supreme Court the decree entered by the district court and at the same time asked for a 90-day period in which to submit a plan for separation of the two businesses. Coincident with the notification to the federal district court, the company also addressed a letter to stockholders notifying them of its decision not to appeal.

The Pullman Letter

In August the Pullman Company opened negotiations for the sale of its sleeping car business to the railroads as part of the separation plan. This move was announced to the stockholders of Pullman, Inc., in a letter issued by D. A. Crawford, president of the Corporation, in which he said:

"As subsequently announced, the Board of Directors of Pullman, Inc., have decided that, in order to carry out the requirements of the district court decree, we would endeavor to dispose of the sleeping car business. In pursuance of this decision, the management of the Pullman Company is proceeding, in the first instance, with negotiations with the railroad users of Pullman sleeping car service for development of a plan for separation of the sleeping car business and its connected properties from the remaining companies in the Pullman group." On September 1 Pullman put this plan into operation by addressing a circular letter to the railroads operating sleeping cars furnished under contract by Pullman, ad-

vising them that the company desired to negotiate "in the development of a plan for disposition of the Pullman sleeping car business." The circular also enclosed, for information of the interested railroads, a copy of the court decree directing the separation of the two businesses.

On October 2, Pullman, Inc., in addition to notifying the court that it had elected to sell its sleeping car business and retain the railroad car manufacturing activities in compliance with the anti-trust decree, filed a plan of segregation for "hearings and approval." This plan, which the court has taken under advisement, includes the proposals made to the railroads by Pullman, Inc., suggesting the formation of a railway-sleeping car company which would take over and operate the present sleeping car business of Pullman. The plan places a valuation of $81,325,222 on the properties. Of this amount $42,168,551 consists of heavy-weight standard sleeping cars, shops, laundries and inventories, and $39,156,671 consists of light-weight cars which, according to the plan, will be sold to the new company unless purchased by individual railroads.

Meanwhile, the Pennsylvania has announced a plan to operate its own sleeping cars, with the possible cooperation of connecting lines over which through cars are now operated in interline service with the Pennsylvania. The railways have also formed committees in each region looking toward some solution of the problem, but the work of such committees is not yet far enough along to permit of announcing plans.

In contrast to the definite and well thought out plans of supplying attractive passenger service in the future, the plans for selling such service are still in the formative stage. It has taken a long time for the railways to become sales minded and alert to the necessity for meeting competition by other transportation agencies through aggressive methods. Of the 502 companies in the United States each of which spent more than $100,000 for advertising in 1943, only 8 were railway companies and 3 were allied agencies. A total of $1,799,283 was spent by seven railways—Atchison, Topeka & Santa Fe; Chicago, Milwaukee, St. Paul & Pacific; Erie; New York Central; Northern Pacific; Pennsylvania and Southern Pacific. In addition the Association of American Railroads spent $705,810, the Pullman Company $451,325 and the Railway Express Agency $282,850. In contrast to this relatively modest expenditure, the Proctor & Gamble Company spent $15,509,236; the General Foods Corporation $11,509,236 and the General Motors Corporation $10,130,409. In addition, ten other companies spent between $5,000,000 and $10,000,000.

The Wm. Wrigley, Jr. Company spent 8 cents per dollar of sales on advertising. The Distillers Corporation-Seagrams, Ltd., spent 4 cents per dollar; the American Home Products Company spent 1.7 cents per dollar and Liggett & Myers Tobacco Company spent 1 cent per dollar.

In contrast, none of the railways mentioned spent more than one-tenth of a cent per dollar of operating revenues and most of them were far under this figure. In view of the fact that competition will be just as keen in the transportation industry as in any of the other industries mentioned, it would seem that materially increased advertising on the part of the railways is indicated after the war.

In the matter of salaries paid to passenger traffic solicitors also, the railways are not on a par with other industries. A recent check disclosed that a general agent of a large railway in charge of freight and passenger sales at an off line agency received $2,000 a year less than any of the district sales managers of twelve large industrial companies stationed in the same city, none of which had revenues comparable to those of the railway in question.

The railways have an excellent set up for meeting competition for the travel dollar of the future, so far as prospective service is concerned. The plans for selling such service do not, however, measure up to the service itself, and it is to be hoped that this lack will be remedied on the basis of the facts developed through studies and research now being conducted by the Association of American Railroads and individual roads.



Attractive Interior Decorations Will Mark Coming Trains



passenger CARS *in the years ahead*

To feature maximum safety, speed, comfort, service – Will be lighter in weight, largely fabricated by welding – Improvements of many details anticipated

EVEN in the war-year of 1943, and doubtless also in 1944, records indicate that private automobiles handled about three times as many passenger-miles as the railways and the latter at least three times as many as highway buses, passenger travel by air being extremely small, or only 20 per cent of that in buses. In the highly-competitive transportation era after the war, predictions are being freely made that there will be more than enough travel demand to tax all types of carriers, but the proportionate business handled by each may and probably will be vastly different than the ratios mentioned above. That is why forward-looking officers of railways, the Pullman Company and car builders are determined that passenger cars of the future shall comprise designs best adapted to sustain and increase the proportion of passenger traffic moving by rail.

Some New Passenger Cars Now in Sight

The success of the railways in meeting post-war competition will depend upon how quickly and effectively they can raise passenger service standards to the required level. A substantial percentage of present railway passenger cars will have to be permanently retired, other cars reconditioned for secondary service and improved new equipment constructed and placed in service just about as fast as the builders can furnish it. These new cars will be designed to supply in superlative degree, safe, fast, comfortable and convenient transportation with high passenger appeal. Buses will have an important advantage in low-cost fares, airplanes in super speeds between terminals, and private automobiles in personalized service, but all other factors favor the railroads. The trend towards lightweight construction, utilizing high-strength or lightweight materials in cars largely fabricated by welding, will apparently continue, since this will permit handling more cars, or the same number of cars at higher speeds, with the same motive power.

With passenger-train car building practically suspended since early in 1942, the first success attending efforts of individual railroads, backed by the Office of Defense Transportation, to secure badly needed new passenger equipment is the recent action of the War Production Board in allocating materials for 40 aluminum and 15 steel cars to be built by the American Car and Foundry Company. As announced in the *Railway Age* of October 21, these cars will be constructed at the company's plant, St. Charles, Mo., which is no longer considered in a No. 1 critical labor area. The cars include 20 aluminum coach-baggage cars for the New York Central; 20 aluminum coaches for the Louisville & Nashville; 6 steel baggage-express and 2 steel baggage-mail cars for the New York, Chicago & St. Louis; and 2 steel baggage-express cars for the Western Railway of Alabama. Work on these cars will be started immediately on completion of 100 hospital cars, now being built at the same plant for the U. S. War Department and constituting the only passenger cars at present under construction.

The efforts of the railways to make at least a start in supplying their needs for new equipment is shown by orders and space reservations placed with individual car builders, as reported from time to time in *Railway Age* since the first of the year. In general, these orders and reservations for car building space have been subject to cancellation and the right to change the numbers and types of cars involved, dependent upon conditions when critical materials are again released for passenger car construction.

These tentative orders, as reported in *Railway Age*, include 300 cars of various types for the New York Central, 153 to be supplied by the Pullman-Standard Car Manufacturing Company, 127 by the Edward G. Budd Manufacturing Company and 20 by the American Car and Foundry Company. The latter company has received orders for 28 passenger cars for the Louisville & Nashville and 5 baggage-express cars for the New York, Chicago & St. Louis. Early in the year, an order was placed by the Missouri Pacific with Budd for 6 chair cars, all of these tentative orders being subject to approval by W. P. B.

As an added means of reserving car-building space, a number of roads have asked for bids for passenger cars of various types. Among others, inquiries are reported for one 7-car streamline train for the Wabash; 25 passenger-train cars for the Seaboard Air Line; 24 lightweight coaches of alloy-steel construction for the Northern Pacific; and 10 new passenger-train cars for the Denver & Rio Grande Western.

Before going further into a discussion of passenger-car characteristics which are likely to predominate in the period after the war, it will be of interest to note the condition of present equipment as a result of the intensive service and under-maintenance to which war-time conditions have subjected it. Reference to the accompanying table and charts show that the number of revenue passenger-miles on Class I carriers increased from a low of 16.3 billion in the depression year of 1933 to 87.8 billion in 1943, being almost three times as much as in the pre-war year 1941, and about twice that of the previous peak year of 1920. Passenger-train car-miles showed a similar trend, but with less extreme variations, amounting to 4.4 billion in 1943 and there is every indication that this figure will reach 5 billion in 1944.

Almost 30 per cent of the total passenger-miles in 1943, or roughly 26 billion, was made in Pullman cars and included 12 billion passenger-miles of service performed in handling organized troop movements. It is estimated that the Pullman fleet, comprising an ownership of 7,121 cars as of December 31, 1943, and now supplemented with 1,200 troop sleepers and 400 kitchen cars leased from the Defense Plant Corporation, is currently furnishing 85 per cent of the cars required for long-distance troop movements.

Intensive Service

This outstanding contribution to war-time military and civilian passenger transportation demonstrates intensive and carefully planned use of all the equipment available. Cars in the Pullman pool represent only about 25 per cent in number and 11 per cent in normal capacity of all railway passenger-carrying equipment and yet this fleet of cars developed 30 per cent of the total passenger-miles in 1943.

The intensity of service rendered by all railway passenger-carrying equipment is indicated by the fact that, while revenue passenger-miles increased over five times from 1932 to 1944, the number of pasenger cars, including Pullman, in service and available for handling this traffic, steadily decreased from 37,103 to 27,791, or 25 per cent. Passenger-train car-miles and passenger-train cars in service showed similar trends but with less extreme fluctuations. The daily mileage of passenger-carrying cars, including coach, sleeping and parlor cars has practically doubled since 1920 and the same may be said of the more or less complicated figure which represents car occupancy.

The reduction in number of passenger-carrying cars was of course due primarily to the excess of retirements over new installations for a period of years, as shown in the table and one of the charts. With the exception of the troop sleepers, kitchen cars and hospital cars mentioned, no new passenger-carrying cars have been built since 1942, and the 273 passenger-train cars shown as being installed in that year were doubtless ordered and practically completed with materials and manpower made available during the preceding year. The table contains one column of capital expenditures for passenger-train cars which shows how inadequate, considering the railroads as a whole, their investment in modern passenger equipment has been during the last decade or more. As a matter of fact, even these figures are somewhat misleading since they include not only the cost of new equipment, but improvements to older cars which are chargeable to capital account.

Under-Maintenance

Having shown the intensity of service being exacted from present passenger equipment and the inadequate character of the passenger-car improvement program, including the acquisition of new cars in the last few years, it is in order to discuss under-maintenance, or deferred maintenance. Every one acknowledges the existence of this factor, admits its importance and agrees that it represents a cumulative effect which must be faced sooner or later.

Unfortunately, no exact figures for deferred maintenance of passenger cars can be given. Both railroads and the Pullman Company have concentrated on repairs to running gear and other parts essential to safe, reliable operation and, generally speaking, program repairs and heavy maintenance work have been impracticable because cars could not be spared long enough from road service. The annual figures for passenger-train car repairs and their ratio to total operating expense are set up in two columns of the table, but tend to throw a false light on the present condition of passenger equipment as regards maintenance.

With roughly three times as much money spent for repairs to a substantially smaller number of cars in 1943, as compared with 1932, for example, it might be assumed that maintenance work per car was becoming nearly if not quite adequate. This deduction is erroneous for a number of reasons. In the first place, 1932 was a depression year and by no means a satisfactory basis of comparison since no more repair work was done than absolutely essential. Moreover, material prices were probably at least 50 per cent higher and labor prices 25 per cent higher in 1943, so proportionately less repair work

Statistics of Passenger Train Car Performance, Equipment in Service and Maintenance Cost on Class I Carriers

Year	Revenue passenger miles (1,000)	Passenger-train car-miles (1,000)	Passenger-carrying cars in service (Incl. Pullman)	Passenger-train cars in service	New pass. train cars installed	Passenger-train cars retired	Passenger-train-car repairs	Per cent of total op. expense	Capital exp. for passenger-train cars (000)
1920	46,848,667	3,583,449	41,561	56,102	...	....	$100,438,687	1.723	$18,000*
1929	31,074,134	3,906,232	39,394	53,838	...	....	75,253,355	1.670	39,000
1932	16,971,044	2,799,941	37,103	49,353	58	1,345	37,140,936	1.545	5,000
1933	16,340,509	2,566,306	34,815	46,510	7	2,081	35,350,860	1.572	2,000
1934	18,033,309	2,648,136	33,032	43,845	270	2,318	40,623,135	1.664	12,000
1935	18,475,571	2,710,574	31,083	41,584	225	2,075	51,301,952	1.979	16,000
1936	22,421,009	2,919,219	30,493	40,609	159	988	61,274,387	2.090	19,000
1937	24,655,414	3,080,215	29,759	40,259	576	842	67,580,767	2.167	41,000
1938	21,628,718	2,923,626	29,027	39,309	275	1,009	52,833,727	1.941	18,000
1939	22,651,334	2,976,512	28,131	38,427	209	790	63,526,959	2.177	20,000
1940	23,762,359	3,011,639	27,586	37,817	154	754	67,373,181	2.181	18,000
1941	29,350,228	3,223,380	27,702	37,897	297	587	77,905,533	2.126	29,000
1942	53,658,615	3,750,930	27,902	38,051	273	838	89,697,815	1.949	24,000
1943	87,819,503	4,405,880	27,791	37,940	...	....	109,205,083	1.927	6,000

* For the year 1922.

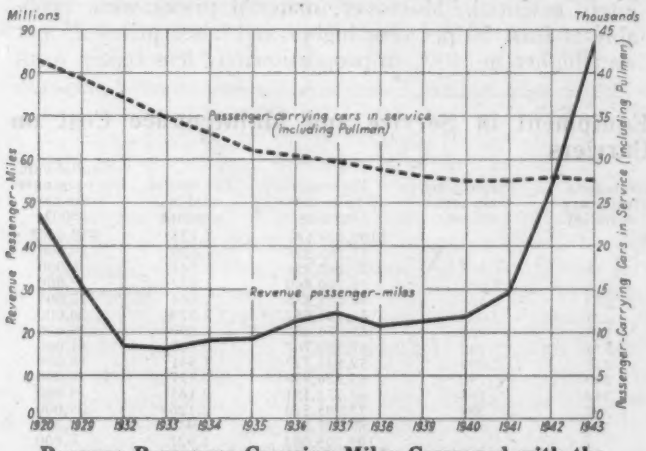
was done for a given number of dollars. Still another important factor is the fact that present running repair work on passenger cars at coach yards and terminals is, for the most part, definitely makeshift, temporary in character and more costly than if it could be performed in coach shops equipped with proper facilities for doing the work.

For example, two well-known modern streamline trains, which operate on opposing runs of a little over 1,000 miles a day, made six million miles in eight years before there was an opportunity to send them to the shops for a general overhauling. Repair work was done to individual cars at terminals and sometimes en route and maintenance costs in connection with these two trains were high but apparently unavoidable owing to the intensive service demands made upon them.

Obsolescence

Another passenger-car condition having an important and adverse bearing on the ability of railways to meet modern passenger traffic requirements is the age of present equipment. As of January 1, this year, 890 cars, or 2.35 per cent of the total ownership of 37,940 passenger-train cars on Class I roads were one to five years old and 3,167, or 4.71 per cent were six to ten years old. This means that only about seven per cent of the railways' present passenger-car inventory has been built within the last ten years and can, in any sense of the word, be considered modern. By contrast, 18,737 cars, or practically 50 per cent are over 25 years old. There are more coaches over 25 years old than in any other five-year age group. The status of Pullman equipment is somewhat better than that of railroad-owned cars, 17.58 per cent of a total of 7,121 cars being from one to ten years old and only 31.02 per cent over 25 years old.

This condition unquestionably requires drastic action looking to post-war needs, but it is not practicable to place an arbitrary limit on the life of conventional heavyweight passenger cars. Where such cars have been well designed and properly maintained the structures will remain in sound physical condition for many years beyond the useful life of the cars. Factors governing the retirement of such cars are the obsolescence of the passenger accommodations, mechanical appliances, trucks, couplers, draft gears, etc., all of which are subject to modernizing. Many standard cars have been rebuilt and modernized from time to time incorporating the latest types of accommodations within the old structures and bringing up to date mechanical details of the cars. Aside from the weight feature, which affects train operation only, these rebuilt cars are comparable as far as passenger safety,



Revenue Passenger-Carrying Miles Compared with the Equipment in Service

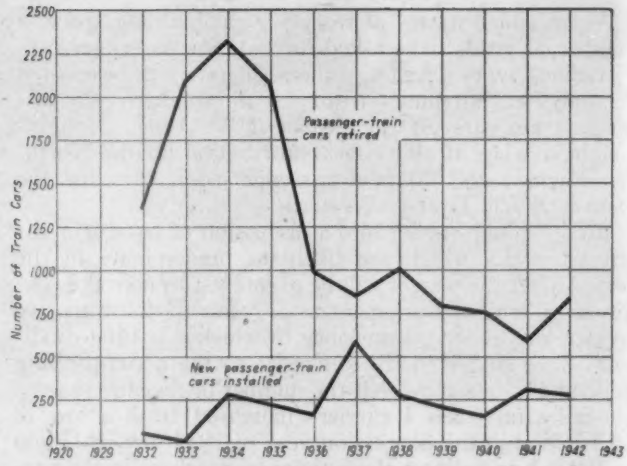


Chart Showing Fluctuations in Passenger-Train Cars Installed and Retired

comfort and conveniences are concerned with the new lightweight cars. Whether the modernization is justified depends upon the relative cost of bringing such cars up to date as against the cost of new cars and the relative cost of maintenance, as well as the service for which the cars are suitable and intended.

As already suggested, the use of lightweight passenger cars results in large operating economies when they permit increasing the number of cars which can be handled in a train with one locomotive or when they make possible faster schedules without increasing the power requirements, or a combination of these two factors. However, there are many runs where additional cars are not required and where there is no advantage in increasing the speed as, for example, short over night sleeping-car runs. For such service, the economies resulting from the substitution of lightweight equipment are almost negligible, and theoretically only a small fuel saving is effected. Apparently the railroads can make effective use for many years of a reasonable number of modernized heavyweight cars.

Just how many heavy passenger cars may be profitably rebuilt and rewritten into the property account is a question which individual railroads must answer in the light of their own particular operating conditions and traffic requirements. One thing is sure, they will have to supplement even the best of rebuilt equipment with a large volume of new cars if they are to meet competitive conditions after the war. In view of the generally obsolete character of such a large percentage of present passenger car equipment, it has been estimated that 15,000 new cars will be required to raise passenger service standards to the desired level after the war. With a total passenger-car building capacity of about 3,000 cars a year, it will therefore take approximately five years for the railroads to secure this added new equipment.

Structural Materials—Lightweight

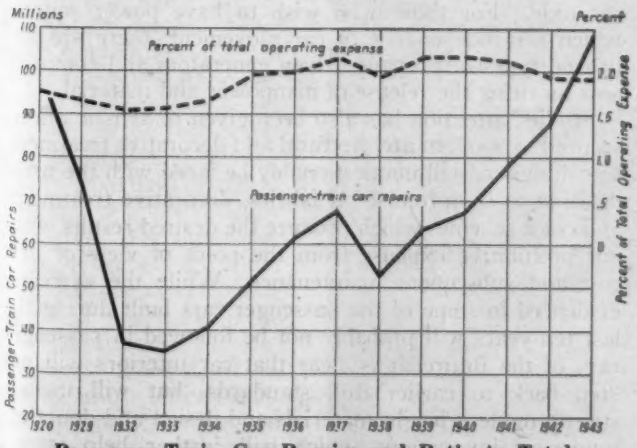
Popular ideas to the contrary, no startling new materials will apparently be widely used in passenger-car-body structures built in the immediate future, owing to intensive and highly successful development of these materials and car-fabricating processes in the last 10 years. The materials referred to include carbon steel, low-alloy high-tensile steel, high-tensile stainless steel and strong aluminum alloys, all having physical properties and characteristics which are well known. The decision regarding which to use in particular installations will depend upon how individual railways evaluate the relative advantages of lightweight, strength, durability and other characteristics of the respective materials.

The opinion is occasionally expressed that railroads have gone too far in reducing the weight of passenger cars, but the consensus is that practically all of this equipment built after the war will embody some degree of weight saving. As compared with earlier standard 85-ft. coaches weighing up to 160,000 lb., one car builder is now prepared to furnish a riveted carbon-steel car of modern design, weighing about 126,000 lb. and designed for use where extreme lightweight is not required. Welded low-alloy high-tensile steel cars of equivalent capacity have been built weighing 113,000 lb., which is approximately the weight of the latest stainless steel cars, built in 1941. Riveted aluminum-alloy coaches of this capacity have been built, weighing about 105,000 lb. In cases where there is economic justification for maximum weight saving, it is anticipated that cars of equivalent size and strength can be built weighing only about 95,000 lb., not so much by providing lighter car bodies as by further reducing the weight of trucks, air-conditioning parts, interior equipment, etc.

Trucks

Trucks for the passenger car of the future will probably be for the most part of the four-wheel type, although one promising six-wheel truck is being developed which, of course, has the important advantages of an additional pair of wheels for braking and the retention of a wheel base in case one journal burns off or an axle breaks. With proper design, including usually free-acting helical springs, suitably snubbed, rubber-stopped bolsters which are positioned without friction bearing against the truck frame, four-wheel trucks can be made practically as easy riding as those of six-wheel design and generally lighter in weight. This is important since present four-wheel trucks on streamline cars weigh upwards of 38,000 lb. per car set or over one-third of the total car weight. In the effort to secure further weight saving, at least one four-wheel truck design is contemplated which will weigh only about 14,000 lb. or 28,000 lb. per car set.

The trucks on tomorrow's streamline trains will probably be equipped for the most part with roller bearings, although plain bearings of improved type have been used on a number of streamliners and much effective research has gone into the development of durable, heat-resistant, low-friction journal-bearing metals, journal-box details and lubricating devices. Brakes on the new trucks will be either clasp, or possibly disc-type, and anti-wheel-slide devices will be applied. After extended experience with steel wheels in modern streamline trains, the manufacturers have developed wheels well adapted to meet the exacting requirements. Low-carbon heat-treated wheels, of either the Class B or Class A types, are said to be giving satisfactory results in this service.



Passenger-Train Car Repairs and Ratio to Total Operating Expense

In connection with easy riding, one car designer and builder expresses the firm conviction that the greatest comfort at high speed will never be attained until the center-plate type of support for passenger car bodies is supplanted by some form of above-gravity spring suspension. He maintains that, unless this is done, "the railroads may buy new passenger equipment which is appealing to the eye but, when the lights are turned out, it will be the same old stuff."

Brake Equipment

Tightlock couplers have demonstrated definite advantages in promoting smooth riding, especially when cars equipped with these couplers and no buffers are operated together. When one of these cars is coupled to an older car with the former standard coupler and buffer arrangement, the results can hardly be called satisfactory. The entire subject of coupler and draft gear characteristics is being intensively studied with a view to continued development of smoother action between modern passenger cars.

Ten years experience in the braking of modern streamline trains have established the desirability of at least four principal features, as represented by H. S. C. equipment in order to make the shortest stops under all rail conditions. Speed governor control, the basic requirement, automatically proportions that braking force to the speed, permitting maximum usable retardation at all speeds and avoiding overbraking at low speeds. Electropneumatic transmission reduces the application time and smooths the ride. An anti-wheel-slide device automatically reduces brake-cylinder pressure when wheel slip impends and an associated automatic sander applies sand to the rails on a timed basis whenever required to maintain necessary adhesion.

Heating and Air Conditioning

In railway cars of the future, the passenger will be as comfortable as in his home or office, with practically complete freedom from uncomfortable sensations caused by drafts, overheating, uneven temperatures, air stratification, etc. Heat loss or gain in a passenger car, like any other space requiring heating or cooling, is continuous, at a fixed rate, for any given set of conditions. These conditions change much more abruptly in a passenger car than in any other type of space but carefully designed heating and cooling layouts and control systems are available which will maintain desired car conditions at all times.

An attempt will be made to maintain an adequate supply of steam for car heating at all times regardless of the length of the train. Improved insulation and the removal of restrictions in train lines of the required size will make this possible, and also deliver steam of better quality and higher superheat so as to cut train line condensate losses. Reduction of superheat of the steam, rather than conversion to condensate during transmission through the trainline will assure dry steam for car heating.

Inside the car an accurate balance will be attempted between floor and overhead heat so that both operate in unison to provide a continuous supply of heat at a rate sufficient to offset heat loss. Control of both floor and overhead heat will be adjusted to give an adequate flow of heat to the space at the proper temperature to maintain constant temperatures. Likewise, the final control of cooling supplied by the overhead system will provide for

a continuous supply of air at a temperature to offset heat gains. Outdoor air will be introduced to the car in minimum quantities required for ventilation during the heating and cooling cycles with provision for increasing the quantity of outdoor air introduced when it is suitable for car-cooling during intermediate seasons. Worthwhile economies in operation will be obtained if the overhead system can be designed to take in all fresh air at times when outdoor air conditions are suitable for direct introduction into the car spaces.

Air-conditioning facilities will include new compressors and improved compressor drives. Electrostatic air filters will become available.

Important improvements have been made in temperature control apparatus which are readily adaptable to railroad passenger cars. The trend is toward simplified controls which assure identical conditions in all cars of a train, effective distribution of heating and cooling within a single car, and removal of responsibility of trainmen for making adjustments. One of the newer developments is electronic control designed to regulate car space temperatures within a fraction of a degree and fully modulate the heating or cooling supply. Passenger discomfort caused by wide variations in temperature are said to be eliminated because the electronic system of control responds immediately to any change in temperature and makes the necessary change in heating or cooling output to maintain car conditions constant.

Summing up, the objectives sought and seemingly sure to be obtained in large measure with modern heating and air-conditioning equipment are temperature comfort in every part of the car; increased efficiency and lighter weight; greater simplicity and ease of maintenance. Some of these objectives are obviously conflicting but American ingenuity and "know how" are already making real progress towards their attainment.

Interior Arrangements

Great interest centers in the various car interior arrangements which will have such an important bearing on service afforded and customer satisfaction. The trend is definitely towards a larger proportion of coach facilities, with seats probably limited to about 50 per car in order to give necessary seat spacing for night occupancy of the reclining-back seats. Less men's and women's lounge room space would seem to be required since smoking is now quite widely permitted in main passenger compartments, but adequate washrooms are essential in proportion to the car seating capacity.

One triple-deck coach design for commuter service has been announced recently, also a three-tier sleeping car which has some exceptionally interesting service features and promises to provide comfortable day-time as well as night sleeping accommodations at reduced cost. Another important result of Pullman research is the duplex-roomette sleeping car which has benefited by over one hundred detail suggestions for improvement since being first introduced early in 1942 and now presents a practically perfected design ready for quantity production. Railroads and car builders have also given intensive study to other types of cars for first-class travel and the diner, lounge, chair and observation cars of the future will present refinements in design adapted to make passenger travel by rail a most pleasant experience.

In post-war passenger-car interiors, new materials, both natural and synthetic, will be widely used for wainscot panels, headlinings, partitions, doors, tables, window capping, etc. Attractive modern appearance, durability and light weight will be emphasized. An example of the latter feature is aluminum-covered plywood which in a ½-in. partition with .016-in. aluminum faces, weighs slightly less than 1.8 lb. per sq. ft. The lightest comparable partition in hollow metal, made with two sheets of .051-in. aluminum, would normally weigh 2.5 lb. per sq. ft.

Luggage racks, in many instances, will be made of aluminum with built-in lighting to enhance the appearance and add to convenience of the car. Windows will be double-glazed unit-type for insulating effect in air-conditioned cars and will be fitted with a breather device to insure clear vision at all times. On modern cars, the tendency is towards windows of maximum width, with venetian blinds applied largely for decorative purposes on lounge and parlor cars, or cable-type curtains to give smooth, even operation. Vestibule platforms will be made with a foot-plate enclosure boot to keep the platforms free from dirt and snow and to minimize the entrance of dust which otherwise is sucked into the vestibule when trains are operating at high speed.

In view of extensive experience and study of seating requirements, it is safe to say that seats in the new passenger cars will be largely of the rubber cushion type and superlatively comfortable, as well as attractively designed and upholstered. Improvements in coach seats will probably include hinged back sections which may be dropped when desired and serve as comfortable leg rests for passengers in the seats behind.

Lighting and Decorative Treatment

In keeping with new types of cars which have been developed and with the many new interiors which have been conceived on paper, the designers of lighting equipment have worked out an even greater number of appropriate lighting fixtures and schemes for lighting. These incorporate features of efficiency and novelty as well as good illumination and will make use of new types of light sources. Among these are the recently announced extremely thin instant-starting fluorescent lamps. It is also expected that circular fluorescent lamps will be available.

For those who wish to use these types of lamps on cars equipped with direct current at 32 volts, there are motor alternators and new and improved types of vibrating converters. If the user prefers to apply d. c. directly to fluorescent lamps, he has the opportunity of employing 64- or 110-volt systems or of raising 32 volts d. c. to 64 volts d. c. by means of either a rotating or vibrating type booster.

Immediately before the war stopped production of passenger-car equipment, the genemotor was finding wide favor among those who develop their power from the car axle. For those who wish to have power sources which are independent of car movement, there are improved types of propane-driven generators and compressors awaiting the release of manpower and material.

Studied attention has also been given to artistic effects secured by modern architectural and decorative treatment. Car designers will unquestionably be faced with the usual decision to compromise on fabrics, decorative treatments and color schemes which produce the desired results without prohibitive expense from the point of view of first cost and subsequent maintenance. While the extremes evidenced in some of the passenger cars built during the last ten years will probably not be followed in passenger cars of the future, it is clear that car interiors will not step back to earlier dull standards, but will include strictly modern bright materials and design and doubtless numerous innovations which will further help attract passenger traffic to the rails.

passenger POWER *for the future*

Many people expect radical changes in the character of motive power—Some of these changes have already been made and tomorrow's locomotive is running today

IN THE 12 months that have elapsed since the publication of the last article analyzing the trends in the development and utilization of motive power for passenger service, which appeared in the November 20, 1943, issue of *Railway Age*, there is hardly a record of any character, with respect to passenger locomotives, that has not been surpassed.

The total number of passenger locomotive-miles, which increased 10.7 per cent in 1943 over 1942 still continues to go up and shows a 2.2 per cent increase for the eight months of 1944 over the same period for 1943. It is an interesting sidelight to take note of the fact that the passenger-train car-miles per passenger locomotive-mile were, for eight months of 1944, 9.2 in steam service, 11.1 for electric locomotive service and 10.3 for Diesel-electric-operated trains. These three figures, giving some indication of the fact that the work required of passenger locomotives is increasing also, compare with 8.1, 10.7 and 8.0 for the same period of 1942. So much for the over-all work required of passenger motive power.

As in freight service the real reason why the motive power of American railroads has been able to do a war-time job that has exceeded in proportions any similar demand within a similar period in the history of railroading rests almost entirely upon two major factors: the ability of a relatively small group of less-than-10-year-old locomotives, including both steam and Diesel, to handle as much as 50 to 60 per cent of the passenger-train mileage of individual railroads, and the continued high utilization of the entire inventory with respect to the number in service. Table I, for example, shows statistically that between 1934 and the outbreak of the war in 1941 the total number of passenger locomotives dropped from a total of 9,400 down to 6,700, a decrease of 2,700. The number of serviceable units, in that same period, dropped from 6,800 to 5,800, a decrease of approximately 1,000 units. The significant figures, however, are those that refer to unserviceable and stored power, for in the first classification the decrease was from 2,461 to 936 and, in the latter classification, from 972 to 328. In December, 1941 (the roads were using 82.0 per cent of their locomotive inventory and this was in itself a remarkable performance by comparison with 72 per cent in 1934.

The real performance was still to come; beginning with December, 1942, the roads were using 87.2 per cent of the inventory and, except for two months, have not used less than 85 per cent in the 20 months on record since that time. In other words, every month for almost three years has required a higher percentage of total locomotives in service than was required in only the two peak months out of each year prior to the war.

Table II gives the distribution of passenger locomotive miles as between steam, Diesel and electric motive power. This table shows the influence of the war years on the total locomotive mileage required to handle traffic as well as the change that has taken place in the proportion of that traffic handled by the three types of power. In 1936, for example, 95.5 per cent of the locomotive mileage was steam, 4.1 per cent electric and only 0.4 per cent Diesel. There are today 272 Diesel units, averaging 2,070 hp. in service out of 6,800 locomotives assigned to passenger service and the influence of the Diesel is seen in the increasing proportion of the total mileage which has been taken over by the Diesel. It is interesting to note, however, that a comparison of the eight-month periods of 1943 and 1944 shows a decrease of 1.1 per cent in the proportion of Diesel mileage to total and that a

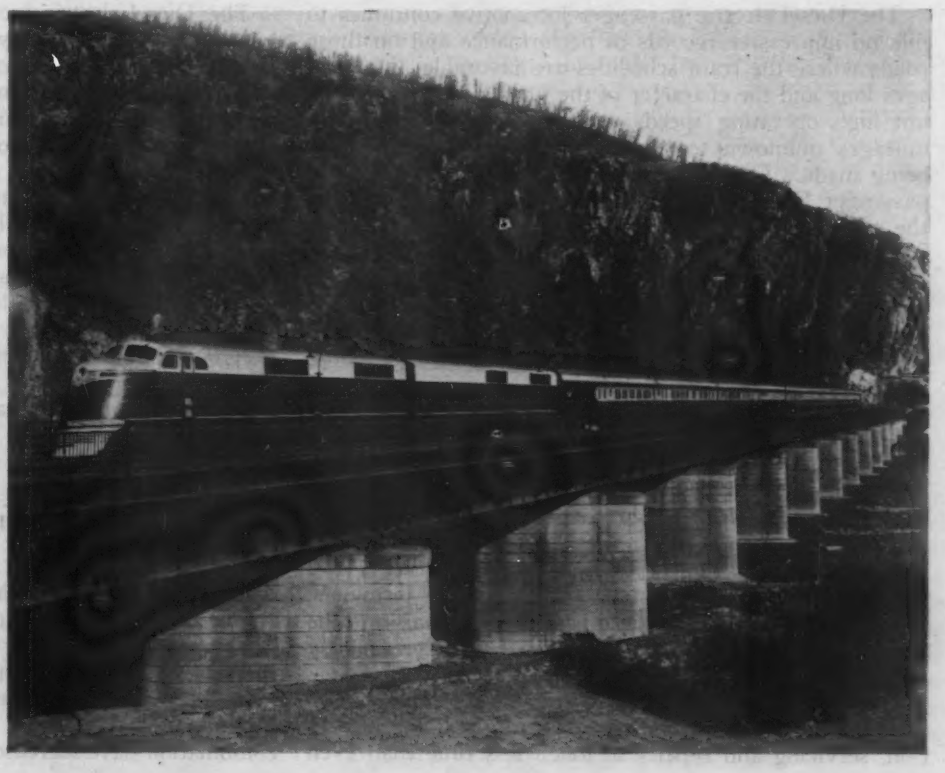


Table I—Statistics of Motive Power Assigned to Passenger Service

	Total Locos.	Serviceable	Unserviceable	Stored	Per cent active to total	Miles per active loco. per day
August, 1934	9,424	6,783	2,461	972	72.0	167.0
December, 1935	8,678	5,848	2,183	647	67.5	126.7
December, 1936	8,232	6,240	1,492	500	75.7	127.0
July, 1937	8,114	6,121	1,564	429	75.5	178.7
January, 1938	8,200	5,797	1,743	660	70.8	171.7
July, 1939	7,730	5,398	1,859	473	69.9	186.4
December, 1940	7,312	5,570	1,417	325	76.0	203.4
December, 1941	7,061	5,797	936	328	82.0	206.3
1942						
September	6,678	5,602	903	169	84.0	214.3
October	6,684	5,636	871	177	84.2	212.0
November	6,674	5,646	849	179	84.7	216.1
December	6,758	5,949	665	144	87.2	226.0
1943						
January	6,765	5,807	794	164	85.9	214.6
February	6,718	5,750	796	172	85.0	218.0
March	6,717	5,779	798	140	86.0	220.7
April	6,705	5,764	802	139	86.1	218.6
May	6,723	5,781	794	148	86.1	213.2
June	6,687	5,702	839	146	85.3	219.5
July	6,717	5,763	811	143	85.9	223.9
August	6,738	5,770	842	126	85.5	226.2
September	6,727	5,741	853	133	85.3	224.3
October	6,802	5,799	877	126	85.2	221.8
November	6,774	5,767	899	108	85.2	223.0
December	6,872	6,050	711	111	88.0	229.3
1944						
January	6,857	5,868	866	123	85.7	214.5
February	6,810	5,774	936	100	84.8	221.6
March	6,811	5,858	858	95	86.1	225.9
April	6,813	5,810	886	117	85.2	224.6
May	6,782	5,723	921	138	84.3	219.6
June	6,809	5,839	834	136	85.7	222.2
July	6,790	5,769	863	158	85.0	221.8
August	6,760	5,763	867	130	85.1	222.6

Note: The above taken from I.C.C. Passenger Train Performance Statistics, Statements No. M-240.

corresponding increase is shown in steam and electric mileage—0.9 per cent for the former and 0.2 per cent for the latter. This would seem to be accounted for by the fact that a limited number of new Diesel passenger locomotives have been installed at a time when a relatively large number of new high-capacity steam units have been built. Like the Diesel, the new steam units have high availability, high capacity at high speeds and except for boiler work, as and when necessary, are relatively free from required mechanical attention between the 30-day inspection and washout periods.

Performance Records of Diesel Power

The Diesel-electric passenger locomotive continues to pile up impressive records of performance and on those roads where the train schedules are favorable, the mileages long and the character of the profile such as to permit high operating speeds average monthly locomotive mileages unknown to the older steam locomotives are being made. On one road where a group of 2,000-hp. passenger Diesel units has been in operation since 1938 the cumulative unit mileage to July, 1944, is 24,200,000. This mileage was made in 1,105 unit-months and represents an average monthly mileage, per unit, of almost 22,000. Individual units on this road, in single months, are making as high as 32,000 miles. The availability of these units, month after month, is running in excess of 95 per cent.

This is an excellent place in this discussion of passenger motive power to draw attention again to the fact that the matter of availability with respect to passenger locomotives can be considered only in relation to train schedules. On most roads having any considerable density of passenger traffic, the despatching of power is related to the character of locomotives, the location and number of servicing and turn-around engine terminals, the distance and average speed between terminals and the available time at engine terminals between regularly scheduled arrivals and departures.

There is no question whatsoever as to the ability of the Diesel locomotive to get through a terminal for inspection, servicing and repairs in much less time than even the most modern steam locomotive and so, therefore, the Diesel has been able to do a fine operating job on long runs at high speeds, then turn around at the end of the run in a minimum of time and repeat the performance. On every road there are scheduled runs where short turning time is of paramount importance and, where such conditions exist, it is natural that the Diesel, having the ability to do work of this character, should get the job. However, there are many conditions where terminal turning time of from two to four hours is available because of the arrangement of the schedules and, where both sets of conditions exists, it would seem that a road would find itself in the position of having ideal operating conditions for both types of power.

The Diesel-electric locomotive has also filled a very important place, on many railroads, that could not probably have been filled even by modern steam power. A 2,000-hp. Diesel passenger locomotive, carrying its weight distributed over six axles, provides a motive power unit with axle loading of only about 52,000 lb. A 4,000-hp. two-unit Diesel has no greater load per axle; neither does a 6,000-hp. three-unit Diesel. Regardless of other considerations it is hardly possible to build a 4,000-hp. steam locomotive, of comparative train-handling characteristics, with axle loads as low as the Diesel. This one fact alone, during the past few years, has made it possible for many roads having a considerable proportion of single-track main line, light rail and relatively low bridge capacities to handle a volume of passenger traffic that could not have been handled with motive power other than Diesel without making costly changes to the physical structure of the right-of-way.

Steam Power Can Break Records, Too!

Speculation as to the locomotive of the future is always an interesting pastime. We have said before, and repeat now, that major developments in locomotive design take place over long periods of time. The improvements that distinguish modern locomotives from those built 20 years ago are refinements in detail, changes in materials, variations in proportions—all of which in combination have increased capacity and reduced the fre-

quency with which maintenance attention is required. The possibilities of a variety of combinations of the above factors to produce still further improvement are unlimited.

There need be no blind speculation as to what the steam locomotive of the future will be. The layman, at least, always expects something radically different than that which we now have or had in the past. The railroad man who lives with the motive power problem day after day is a good example of the old adage of the "forest and the trees" for he, probably as much so as the layman, is not fully conscious of the fact that he not only has before his eyes today the locomotive of the future but that he actually *has something radically different* than he had 20, or even 10, years ago.



Here is a composite picture of the passenger motive power operating on several roads today, the primary characteristics of which are sustained capacity to haul heavy trains—on heavy grades if necessary—at speeds of from 45 to 70 m.p.h.; a design suitable for top speeds of 90 to 100 m.p.h. and the ability to run over long distances, day in and day out, with only minor terminal servicing between 30-day inspection and washout periods. Such a locomotive is usually of the 4-8-4 type, of 70,000 or more pounds tractive force, having a total weight, of engine and tender, of over 800,000 lb. It will have a cast-steel bed, roller bearings on *all* engine and tender axles, roller bearings on wrist pins, crank pins and valve gear. It will have mechanical lubrication for all major moving parts of the locomotive and be so designed, with respect to lubrication equipment, that it can operate more than 1,000 miles without replenishment of oil reservoirs and over 500 miles without attention to the roller-bearing lubrication.

This modern locomotive can operate at an average of better than 400 miles a day and be out of service, for all causes, less than one day out of every sixteen. It can run 2,400 miles without fire cleaning and, having a tender that will hold 25 tons of coal and 25,000 gallons of water, make most engine-division runs without the necessity of stopping for coal or water. Some idea of the reliability of this machine can be had from the fact that it can average around 175,000 miles for every engine failure that can be charged against the engine. A group of such modern locomotives, on one road, averaged 238,000 miles between shoppings for classified repairs. A check of one month's actual operation of these locomotives, on that same road, showed that out of over 700 enginemen's reports covering the operation of six locomotives exactly 86.4 per cent were entirely blank—no work required.

There is your modern passenger locomotive. It is so far superior to the locomotive of 20 years ago that there is no comparison. Just one factor—work required at engine terminals—tells a large part of the story for on the road mentioned above a similar check of enginemen's reports on a group of eight 20-year-old locomotives showed that *85.2 per cent called for work to be done at enginehouses*. After all, availability really means nothing more than being ready to go when needed. This modern power has that capability.

The railroads are fortunate in that they are ready to enter the postwar period knowing that they have, or can readily get, the kind of motive power, whether it be Diesel, steam or electric, that will handle effectively any traffic situation, no matter how difficult.

Table II—Distribution of Passenger Locomotive Mileage—1936-1944

	Passenger locomotive-miles (thousands)			
	Total	Steam	Electric	Diesel
1936	371,858	355,375	15,213	1,269
Per cent of total		95.5	4.1	0.4
1937	384,971	364,814	16,106	4,051
Per cent of total		95.0	4.2	1.03
1938	357,120	332,883	16,722	7,615
Per cent of total		93.2	4.7	2.1
1939	357,339	329,308	17,556	10,476
Per cent of total		92.2	4.9	2.9
1940	362,312	324,075	18,456	19,781
Per cent of total		89.5	5.1	5.4
1941	380,269	329,411	20,053	30,805
Per cent of total		86.6	5.3	8.1
1942	421,203	358,798	22,823	39,581
Per cent of total		85.2	5.4	9.4
1943	465,908	400,225	24,688	40,995
Per cent of total		85.9	5.3	8.8
1943*	307,164	263,568	16,128	27,468
Per cent of total		85.84	5.24	8.92
1944*	313,866	273,294	16,660	23,912
Per cent of total		86.8	5.4	7.8

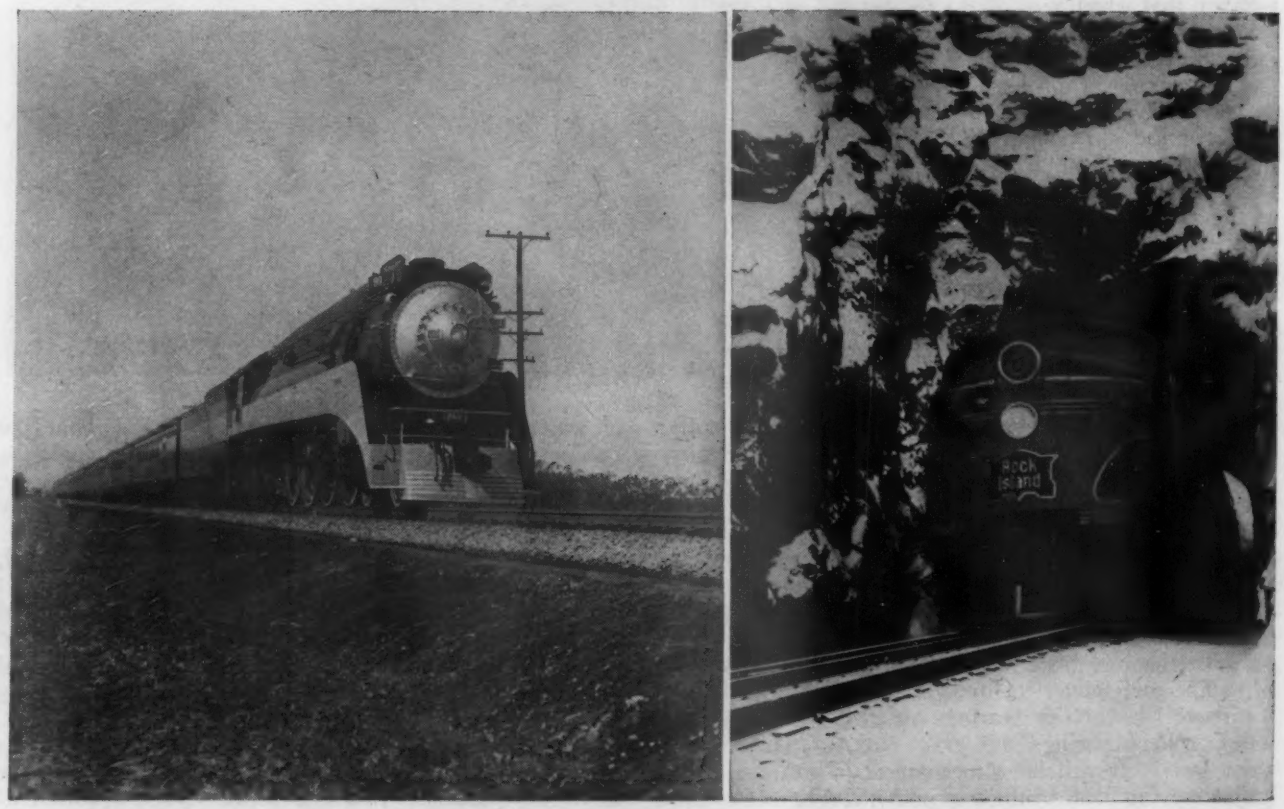
* Eight months.
Note: The above data taken from I.C.C. Statement No. M-213.

Maintenance Facilities Are Also Important

Shopping time, for general repairs, is also an important factor. A modern locomotive is expensive and, therefore, must be kept busy. Well-equipped and well-organized backshops are demonstrating their ability to overhaul a modern unit—of more than 70,000 lb. tractive force—in from seven to twelve days, and this after having made 250,000 miles in service. The war period has shown the inadequacy of a large part of our shop and terminal facilities and major rehabilitation programs involving several millions of dollars are now under way on most of our more important railroads.

outlook for STREAMLINERS

Assured public demand for modernized service has caused some roads to place orders already for car building space



Through All Sorts of Weather and Widely Varying Terrain, the Streamliners Easily Have Proved Their Worth

THE flashing streamliners may have their bright colors a bit dimmed as the result of hard, utilitarian, wartime usage, but they have lost none of their appeal to the public. All trains are certainly crowded enough, but the streamliners are particularly packed, often with people who would rather stand on a streamliner than have a seat on a slower, less attractive ordinary train. Streamliners have proved pre-eminently that they are the trains of the future and afford a most potent weapon in meeting the competition which the future will bring.

"Phantom" Orders Placed

In recognition of these facts, many roads have already placed what have been christened "phantom" orders for lightweight passenger equipment either specifically for streamlined trains or for possible use in such trains. These orders are, in general, only reservations for car building space when critical materials for passenger cars are no longer needed for war purposes. All of the orders have a cancellation clause and the right to change the types and numbers of cars in due notification. Among such orders placed were the following:

Railway	No. of Cars
L. & N.	28
M. P.	6
N. Y. C.	300
P. M.	14
Seaboard	25
A. T. & S. F.	80
Wabash	7
N. P.	24

There are many others which bring the total to nearly 1,000 cars. Also, for the first time, the W. P. B. has authorized the building of passenger cars in certain car-building shops not in critical labor areas. The market is opening up and the railways will be quick to take advantage of this fact. They need passenger cars right now, but they also want streamlined trains for the future, since, in a decade of operation and improvement, such trains have proved to be what the public wants and what the public will continue to want.

A list of America's present streamliners is appended. Formidable as this list is, we feel safe in predicting that it is but an indication of what the future will bring forth.

The Nation's Streamliners

Railway	No. of Trains	Name of Train	Normal Consist	Placed in Service	Operated between	Daily Mileage Per Train
Alton	1	Abraham Lincoln	12	7-1-35	Chicago-St. Louis	568
	1	Ann Rutledge	12	7-26-37	Chicago-St. Louis	568
A. T. & S. F.	2	Super Chief	9 (b)	6-15-37	Chicago-Los Angeles	651
	6	Chief	11 (b)	2-28-38	Chicago-Los Angeles	743
	2	Kansas Citian	6	4-17-38	Chicago-Oklahoma City	851
	1	Tulsan	5	12-10-39	Kansas City-Tulsa	512
	2	Golden Gate	6	7-1-38	Oakland-Bakersfield	626
	2	San Diegan	9	3-27-38	Los Angeles-San Diego	512
	2	El Capitan	7	2-22-38	Chicago-Los Angeles	651
A. C. L.-F. E. C. (d)	3	Champion	14	12-1-39	New York-Miami	700
B. & M.-Me. C.	1	Flying Yankee	3	4-1-35	Winter schedule undetermined	
C. & E. I. (f)	1	Dixie Flagler	7	12-17-40	Chicago-Miami	970
C. & N. W.	2	Twin Cities 400	11 (b)	9-24-39	Chicago-Minneapolis	419
	1	Peninsula 400	9	1-8-42	Chicago-Ishpeming	775
	1	Green Bay 400	6	1-8-42	Chicago-Green Bay	585
	1	Capitol 400	5	1-8-42	Chicago-Madison	651
	1	Minnesota 400	5 (b)	1-8-42	Wyeville-Mankato	434
C. & N. W.-U. P.	1	City of Portland	12	6-6-35	Chicago-Portland (g)	805
	2	City of Los Angeles	13	12-27-37	Chicago-Los Angeles	904
	2	City of Denver	11	6-18-36	Chicago-Denver	1,048
C. & N. W.-U. P.-S. P.	2	City of San Francisco	13	6-14-36	Chicago-Oakland	961
C. B. & Q.	1	Mark Twain Zephyr	3	2-15-42	St. Louis-Burlington	442
	1	Pioneer Zephyr	4	3-8-42	McCook-Lincoln	456
	2	Denver Zephyr	12	11-8-36	Chicago-Denver	1,037
	2	Twin Zephyr	9	12-18-36	Chicago-Minneapolis	874
	1	General Pershing Zephyr	4	4-30-39	St. Louis-Kansas City	558
	1	Silver Streak Zephyr	4	4-15-40	Lincoln-Kansas City	502
	1	Ak-Sar-Ben Zephyr	8	4-11-40	Lincoln-Chicago	551
(h)	2	Texas Zephyr	12	8-23-40	Denver-Dallas	832
C. B. & Q.-C. R. I. & P.	2	Zephyr Rocket	7	1-17-41	St. Louis-Minneapolis	585
	2	Texas Rocket	4	4-21-35	Houston-Fort Worth	566
C. M. St. P. & P.	2	Afternoon Hiawatha	15 (i)	5-29-35	Chicago-Minneapolis	421
	2	Morning Hiawatha	15	1-21-39	Chicago-Minneapolis	421
	2	Midwest Hiawatha	6	12-11-40	Chicago-Omaha (j)	488
C. N. S. & M.	2	Electroliner	4	2-9-41	Chicago-Milwaukee	425
C. R. I. & P.	2	Rocky Mountain Rocket	7	11-12-39	Chicago-Denver (k)	1,084
	1	Peoria Rocket	4	9-19-37	Chicago-Peoria	644
	2	Kansas City Minneapolis Rocket	3	9-29-37	Kansas City-Minneapolis	489
	2	Kansas City Dallas Rocket	4	11-15-38	Kansas City-Dallas (1)	677
	1	Des Moines Rocket	4	9-26-37	Chicago-Des Moines	716
	2	Choctaw Rocket	4	11-17-40	Memphis-Amarillo	761
F. E. C.	(See A. C. L.)					
G. M. & O.	2	Rebel	4	7-1-35	New Orleans-Jackson (m)	497
I. C.	2	Panama Limited	9	5-3-42	Chicago-New Orleans	921
(n)	1	City of Miami	7	12-18-40	Chicago-Miami	995
	1	Green Diamond	4	5-17-36	Chicago-St. Louis	588
	1	Miss Lou	1	11-17-40	New Orleans-Jackson	366
K. C. S.-L. & A.	3	Southern Belle	9	9-1-40	Kansas City-New Orleans	873
M. P.	2	Missouri River Eagle	6	3-10-40	St. Louis-Omaha	478
	1	Delta Eagle	2	5-11-41	Memphis-Tallulah	518
	2	Colorado Eagle	8	6-21-42	St. Louis-Denver	1,011
N. Y. C.	2	Twentieth Century Limited	17 (b)	6-15-38	New York-Chicago	961
	2	Empire State Express	16 (b)	12-7-41	New York-Cleveland-Detroit (o)	872
(p)	1	James Whitcomb Riley	8	4-28-41	Chicago-Cincinnati	605
N. Y. N. H. & H.	1	Comet	3	6-5-35	Boston-Providence	440
N. Y. S. & W.	2	Susquehanna	3	7-15-40	Susquehanna Transfer-Butler	430
Penna.	2	Broadway Limited	8 (b)	6-15-38	Chicago-New York	908
(q)	1	South Wind	7	12-19-40	Chicago-Miami	1,039
Reading	1	Crusader	5	12-13-37	Jersey City-Philadelphia	360
Seaboard (r)	3	Silver Meteor	17	2-2-39	New York-Miami (s)	1,009
Sou. (u)	3	Southerner	8	3-31-41	New York-New Orleans	924
(v)	3	Tennessean	9	5-17-41	Washington-Memphis	619
	2	Vulcan	2	8-24-39	Chattanooga-Meridian	591
	2	Cracker	2	10-11-39	Atlanta-Brunswick	550
	1	Goldenrod	2	9-24-39	Birmingham-Mobile	528
	1	Joe Wheeler	2	9-29-39	Oakdale-Tuscumbia	497
S. P.	2	Sunbeam	6	9-19-37	Houston-Dallas	264
	2	Coast Daylight	20	3-21-37	San Francisco-Los Angeles	470
	2	San Joaquin Daylight	20	7-4-41	Oakland-Los Angeles	479
	2	Lark	20 (b)	5-1-41	San Francisco-Los Angeles (t)	470
U. P.	(See C. & N. W.)					

(b) Date lightweight equipment was installed instead of heavy on an existing train.
(c) Handles sleeping cars between New York and Florida in summer season.
(d) Full route—Penna.-R. F. & P.-A. C. L.-F. E. C.
(e) Operates between Boston and New Hampshire resorts as the "Mountaineer" in the summer season.
(f) Full route—C. & E. I.-L. & N.-N. C. & St. L.-A. B. & C.-A. C. L.-F. E. C.
(g) Streamlined connection, Portland-Seattle.
(h) Operates over C. & S.-Ft. W. & D. C.
(i) Four new sets of trains on this run since 1935.
(j) Train splits at Manilla, Iowa, one section going to Omaha, another to Sioux Falls.
(k) Streamlined connection operated Kansas City-Belleville and Limon-Colorado Springs.
(l) Also makes round trip between El Reno and Oklahoma City.
(m) Streamlined connection operated between Union and Mobile.
(n) Full route—I. C.-C. of Ga.-A. C. L.-F. E. C.
(o) Train splits at Buffalo, one section going to Cleveland, the other to Detroit, via Michigan Central.
(p) Operates over C. C. C. & St. L., Cincinnati-Kankakee and I. C., Kankakee-Chicago.
(q) Full route—Penna.-L. & N.-A. C. L.-F. E. C.
(r) Full route—Penna.-R. F. & P.-Seaboard.
(s) Streamlined connection, Wildwood-St. Petersburg.
(t) Streamlined connection operated from and to Oakland.
(u) Full route—Penna.-Southern.
(v) Full route—Southern-N. & W.-Southern.

future TRACK



Only the Highest Standards of Track Construction and Maintenance Will Meet the Requirements of Post-war Passenger Train Speeds

Are the fixed properties of the railways—their tracks, bridges, water service facilities and wide variety of line and terminal buildings—adequate to the passenger traffic needs of the remaining months of the war effort, and will they be adequate to meet the still more exacting demands of the post-war period? These questions are analyzed in this article, and the answers are unmistakably "Yes," if those with the responsibility of assuring this adequacy are allowed their essential needs of the war period, and are given the sympathetic co-operation of management, the operating department and the mechanical forces in the post-war years.

PASSENGER progress on the railways depends upon the adequacy of their tracks, bridges, buildings and water service facilities just as definitely as upon any of the other elements of their properties, including locomotives and cars. This was true prior to the war, has demonstrated itself clearly during the war, and is equally certain to be true in the post-war period. In fact, in the post-war period, toward which the railways are looking with increasing interest as our successes in Europe and the Pacific reach new proportions, the tracks and other fixed properties may well determine the extent of that progress.

Regardless of what that period may hold in equipment of advanced design, beauty and appointments, in more attractive passenger fares, and in more convenient train schedules—all of which are contemplated by railway managements—these features will avail the railways little unless they are backed up by tracks and bridges which will permit high-speed, on-time train operation, with maximum comfort and safety; shop and servicing facilities which will support such operations; and station facilities that will be in harmony with the new passenger equipment, and at least comparable to those facilities furnished by their competitors. This is a large order, but it can be filled.

The recent years of war-time train operation, with their safety record three times as good as during comparable years of the first World War, afford ample testimony that engineering and maintenance officers know their responsibilities and have met them. On every hand they have been commended for the part they have played and continue to play in the outstanding record of war-time rail transportation, and justly so, because, in the face of serious shortages of materials, labor and work equipment, it has been only through their eternal vigilance, loyalty and untiring efforts that this record has been possible. And to the extent that continued vigilance, loyalty and effort will be necessary, these same officers and their forces can be relied upon to carry on to the end of the war, and to meet the requirements of the post-war period—come what may. However, in the post-war period, as well as in the months that will precede that period, they will require the sympathetic, enlightened understanding and co-operation of those who control the material and labor supplies of the country, of railway management, and of both the operating and mechanical department forces.

No "Gold Plating"

Contrary to the too general feeling in some quarters on the railways, and to a more serious extent in some quarters of influence off the railways, the fixed properties, including the tracks, are more than a "necessary evil"—they are the very backbone of every rail transportation system. Engineering and maintenance officers know this as no one else, and if they have pressed their claims for materials, men and the tools with which to do their work during recent years, it has been only to offset a lack of understanding of their basic needs and to prevent a rupture of that backbone, with the serious effect that this would have on war transportation, both passenger and freight.

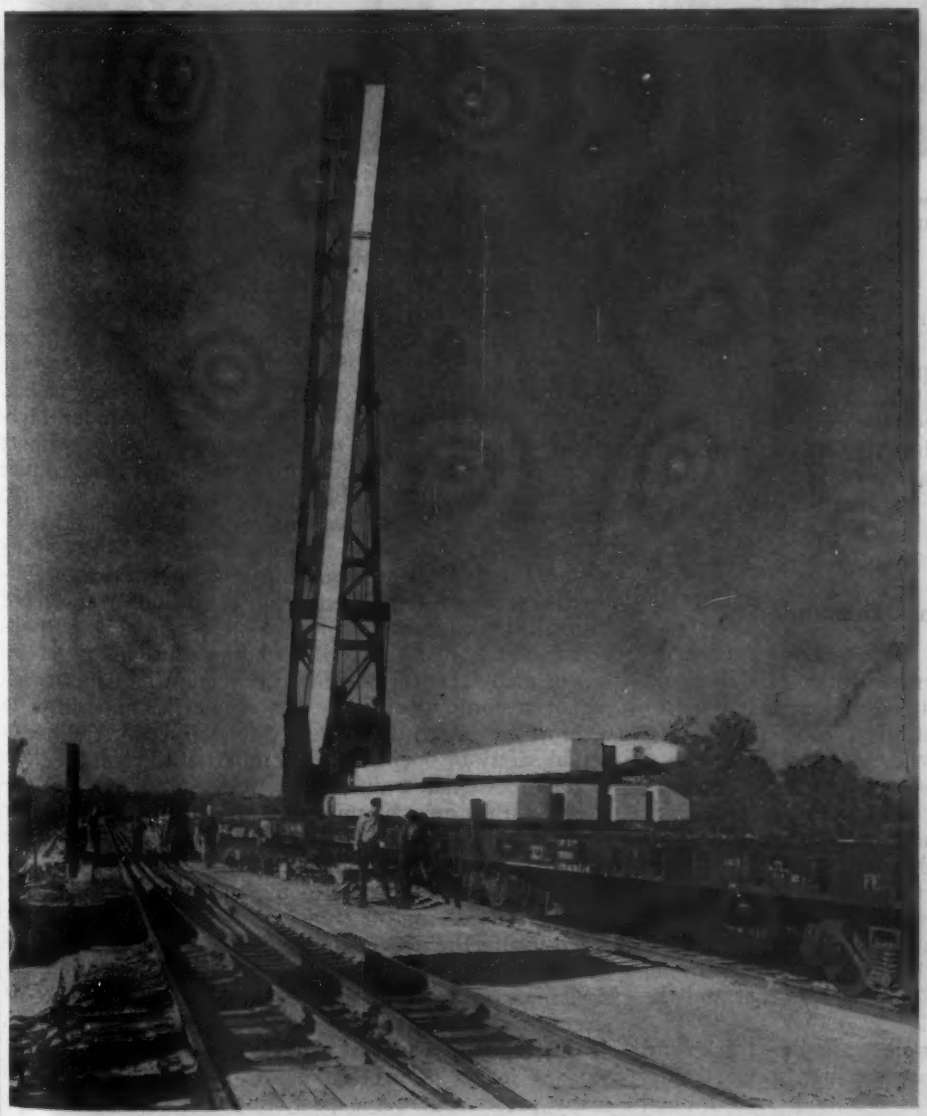
Track forces have played the game of rigid frugality in recent years in the interest of the war effort. The insult that came out of Washington early in the war, that "the railways would not be allowed to 'gold plate' their tracks during the war period," has been hurled back many times as road after road has cut its roadway requirements for critical materials to the bone; has adopted extensive measures to prolong the life of present materials; has combed its properties for usable second-hand materials; and has adopted many expedients, in the face of critical labor shortages, to build back into its tracks the toll in wear and tear exacted by the record-breaking traffic of recent years.

and STRUCTURES

Extensive improvements will be necessary for higher train speeds, but those in charge know the problems involved and most of the answers, and await only the materials, labor and equipment to do the job

The roadway and track forces need make no apologies for their part in the war transportation effort of the railways to date. Contrary to those uninformed at the outset, who looked upon high-speed, reliable passenger train service as a luxury, those directing the efforts of these forces knew of its vital importance to the war effort, an importance which is better appreciated generally today as our wounded fighting men are being brought back to this country and are being moved speedily, comfortably and safely by rail to inland hospitals and rehabilitation centers.

With these officers it has not been a question of "gold plating", but rather one of holding their own in the face of an essential need—and they still fight to hold their own in the face of that need, and with only partial success, as each day, all of their efforts to the contrary, deferred maintenance in the tracks and structures is accumulating. In fact, this situation is causing many of them increasing concern, because they know that this cannot continue indefinitely if adequate war-time passenger service is to continue, and they are equally certain that it cannot continue if the railways are to meet successfully the needs of the post-war period, when the nation will be reverting with all its energy to peace-time pursuits.



The Integrity of All Bridge Structures Is Just as Important as Integrity of Track

During the war thus far, it must be said that there has been little thought on the part of engineering and maintenance officers to "passenger progress" in the sense that it must be thought of in the future. The job as they have seen it has been to maintain and improve the tracks and structures to meet the war-time demands of both passenger and freight traffic, whatever those demands might be, while at the same time employing the minimum amount of critical materials and labor to that end. These demands, which in both passenger and freight transportation have exceeded all previous demands, have called for largely increased expenditures for both construction and maintenance, maintenance expenditures alone during the years 1941-1943, inclusive, amounting to more than $2,506,000,000 an average of approximately $835,460,000 in each of these years, and rising to an all-time high of more than $1,106,870,000 in 1943.

These expenditures are still rising, as the maintenance of way and structures forces have required more



Many Bridges Must Be Renewed or Strengthened to Meet the Demands of Contemplated Post-war Speeds

material, equipment and labor to keep their properties abreast of demands, having amounted to $828,916,000 for the first eight months of the current year, compared with $679,432,000 in the same period in 1943, and $500,723,000 in the like period of 1942. Large as these expenditures have been, they have fallen far short of what should have been spent to enable the fixed properties to hold their own—what would have been spent to this end and in looking ahead to post-war requirements, if the railways could have secured the materials, labor and work equipment required.

Many Improvements Demanded

Paramount during the war in passenger transportation have been volume movement with dependability and safety, and, no doubt, these will be the dominant requirements until the cessation of hostilities. Then, added, but not totally unknown, factors will enter the picture in a large way—the factors of higher speeds, shortened over-all schedules, and maximum economy. These will challenge the ingenuity and resourcefulness of engineering and maintenance officers beyond anything in the past. To an even greater extent they will challenge the imagination and capacity of management, which must get the vision, must develop the demand for service, and must give to those responsible for building and maintaining the tracks and structures the "go ahead" signal and the wherewithal with which to work.

Fundamental to any high-grade main line track, and especially track which must carry high-speed traffic, whether passenger or freight, is a sound, well-drained roadbed. This calls for a roadbed of adequate cross section, clean, free-draining cuts and side ditches, and bridges and culverts of adequate capacity to carry all waterways. Equally essential to modern high-speed train operation are rail of adequate section, strength and integrity, an adequate number of sound cross-ties, and an adequate section of good quality, free-draining ballast, without which no track can be kept safe under high-speed operation, not to mention smooth riding, without excessive expenditures in time and labor for routine maintenance.

As with these basic elements of the roadbed and track structure, so it is with rail joints, track bolts, spring washers, tie plates and rail anti-creeping devices. Furthermore, where high-speed train operation or shortened over-all schedules are desired or are essential—and post-war conditions will make them both desirable and essential in many territories—curve reduction and the spiraling or respiraling of many curves will be imperative to comfort and a sense of security for passengers, if not to actual safety of operation. So important are all of these factors to higher train speeds that, individual and collectively, they must assume a major place in the post-war improvements of the railways, if the railways are to be in a position to offer the type of passenger service that alone can meet the needs of the times and the competition of other forms of transportation.

To insure the dependability of high-speed train operation it is equally important that the roadbed and track structure, after being brought to a high standard of strength and integrity, be afforded adequate protection against floods, washouts, slides and rock falls through various forms of protection and warning devices. In many places, as in the past, line and channel changes

must be undertaken where the hazard is great enough or serious interruptions to traffic are a possibility.

To all of these considerations, adequate war and post-war passenger service, with the avoidance of interference with essential freight araffic, will call for the provision or adjustment of wayside and cab signaling in many territories; the further installation of centralized traffic control, with the relocation or lengthening of additional passing sidings, to increase the capacity of existing lines and to permit meet and passing operations with minimum delays. Other requirements will be the provision of stronger, more wear and abuse-resisting frogs and crossings; the installation of high-speed turnouts at the ends of double track and at other points of traffic diversion in high-speed territory; the elimination of facing-point switches where possible; the installation of switch point locks on all high-speed switches; greater safety precautions at highway grade crossings, including enlarged programs of grade crossing elimination; and, where winter conditions are severe, the installation of adequate snow melting devices in and about terminals and interlockings to keep switches open and operative at all times.

Supplementing these improvements to the track structure, every other element of the fixed properties having bearing on high-speed train operation, the comfort and convenience of passengers, the maintenance of motive power and rolling stock, and the adequacy of roadside and terminal servicing facilities, must be given the attention required or they will tend to offset, it not defeat, all of the factors of advantage that may be built into the track.

Await Only a "Clear Signal"

Thus, continuously for the duration of the war, and unmistakably in the post-war period, the railways must devise added means and facilities for speeding up the handling of trains into and through terminals; must redesign and equip many of their enginehouses and locomotive shops to speed up the turning and repair of locomotives; must relocate or redesign the features of many of their locomotive coaling and watering facilities to shorten service stops; and, in the interest of still longer engine runs, fewer road failures and minimum locomotive maintenance, must look to still greater improvements in locomotive boiler water supplies through advances in and more extensive use of methods of water treatment.

In addition to all of this, they must in the future turn their attention as never before to the modernization of their passenger station facilities, not alone at those points to be served by the streamliners of the future, but at every point where they expect to attract passengers, because it has become only too evident that the public is offended, if not disgusted, with many of the passenger station facilities offered today, and will avoid them at every opportunity in the future if not improved just as soon as the materials and labor to do so become available.

Railway engineering and maintenance officers realize all this, and in its every detail. All they await is the proceed signal to put their house in order. Fortunately, too, they know the "how" of the problems presented in track design and construction, as has been demonstrated amply by the fact that they have already applied effectively to thousands of miles of lines of the country all of the factors necessary to high-speed operation; in shop, servicing and terminal facilities, as shown by the marked advances that have been incorporated in all of these facilities wherever the funds, materials and labor have been available; and in passenger stations, as seen with increasing frequency over the country in new or modernized facilities until stopped by the war.

What they have done already to many miles of main tracks to prepare them for higher speeds, they can do again to any extent called for, and that the necessary things will be done, is seen in the post-war plans of many roads, which contemplate higher speeds and stepped up over-all train schedules on thousands of additional miles of lines. One transcontinental system, for example, contemplates the resumption of a program of roadbed and track strengthening and refinement after the war that will eventually permit passenger train speeds from 100 to 125 m.p.h. from Chicago to the Pacific coast. Another large system looks to the adoption of higher speeds on at least four of its important main lines, with all of the improvements in the track and structures that will be required; and still another system looks to the possibility of higher speeds that will call for extensive roadbed, track and curve reduction work on at least 500 miles of important main line. As to passenger station work, the drawing boards of the railways are crowded with plans, the release of which will revolutionize the present facilities at hundreds of points—with more plans to come as demands require and conditions permit their execution.

And beyond their extensive plans, there are available to the engineering and maintenance forces the physical means with which to carry out their plans more effectively, more expeditiously and more economically than ever before, whether it be in track materials, construction and maintenance equipment, servicing facilities, or building materials and supplies—many the outgrowth of war developments, but many others the result of their own extensive studies, tests and research, all of which go forward today with greater intensity than ever before, looking to the further demands of the war period and the new and greater demands of the post-war period. Thus, it is not a question of whether the engineering and maintenance forces are ready to provide the needs of the remaining war period and the post-war era. Given the necessary materials, equipment and labor, they will meet any passenger traffic demand of the war months ahead, and given the "go ahead" and the funds necessary, they will meet any passenger traffic demand of the future.



Speeds in Excess of 90 M.P.H. Require Unusual Strength, Stability and Refinement in Every Element of the Roadbed and Track Structure

SIGNALING *for speed and safety*



In Modern Interlockings, Line-ups Can Be Changed Quickly, Thus Saving Time for Fast Passenger Trains

Modern systems will increase the effective utilization of the tracks, cars and locomotives by reducing the number of passenger train stops and delays

THE outstanding contribution of modern signaling to future passenger progress will be the aid supplied by efficient installations in getting the passengers to their destinations more quickly, with greater safety and comfort, and at a price to meet competition. Signaling will play a vital part in meeting such competition, since it is one of the important underlying reasons why passengers will be able to make their journeys by rail in ever-increasing speed and safety. The passenger train factors affected by signaling are: safety; on-time train performance; elimination of delays; and the reduction of operating costs to enable lower fares in competition with other forms of transportation. Modern signaling can be an important aid in accomplishing any or all of these objectives. An overall picture of how this can be done is presented herewith.

The basic feature of signaling is the track circuit, by means of which the presence of a train on the rails automatically controls signals to stop other trains which may be approaching. Furthermore, these track circuits are a means for detecting broken rails, and checking the position of all main line switches. Over and above these basic safety features, modern signaling to authorize train movements by signal indication not only obviates the delays inherent in the outmoded timetable and train order system, but also, by use of power switch machines, eliminates the time previously lost in stopping trains to permit brakemen to operate hand-throw switches. The overall effect is to permit trains to be operated throughout their journey at the speeds for which the track, locomotives and cars are designed. Thus there is no easier or more economical means for reducing the overall time of passenger trains between termini than to eliminate stops and delays en route. By thereby aiding in the more efficient utilization of tracks and trains, modern signaling helps not only to get the passengers to their destinations in less time, but also helps to keep the operating expenses on a basis that will permit fares which are attractive to the traveling public.

Safety to Be Extended

Track circuit safety protection to set signals against other trains, as well as to check for broken rails and misplaced switches, is in service on more than 67,619 miles of road in the United States where automatic block or centralized traffic control including automatic block are in service. On the other hand, in the United States and

Canada there are various sections of single track totaling more than 4,000 miles which handle fairly heavy traffic, including through passenger trains, and on which mileage there is no track circuit protection. Therefore, the most important signaling job after the war is to supply such protection on much of this mileage as fast as practicable. Quite logically the signaling to be installed will include not only means for preventing collisions and derailments due to broken rails and misplaced switches, but also means for authorizing train movements by signal indication.

Automatic Block to C. T. C.

As considered by the typical passenger, after being assured of fundamental track circuit safety protection on all the trackage handling through passenger service, a most important point is the elimination of the long delays brought about by trains standing on sidings waiting for other trains to pass. The best known means to do this is to install centralized traffic control, which is a system for use on an extended mileage, up to an entire engine district or, in at least one existing example, over an entire division, including a machine at a central point for controlling machines to operate switches as well as to control signals for authorizing train movements, thus eliminating train orders. The first extensive project to be named centralized traffic control was installed in 1927, and up to January 1, 1942, a total of more than 2,701 track miles, including 1,676 power switches, had been equipped in the United States.

During the war, such centralized traffic control systems have been installed just as fast as equipment was available, on those sections of single track which were overburdened with movements of troops and war materials. As a result, since January, 1942, more than 3,000 miles of C. T. C. have been completed or are now under way; this total being more than the total mileage in service prior to our entry into the war.

Based on the highly satisfactory results being obtained from the C. T. C. installations now in service, the railroads are planning after the war, to change over from ordinary automatic block to centralized traffic control on numerous territories involving, in some instances, a quite considerable mileage. The benefit, as the passengers see it, will be to obviate those standing delays at so many country sidings, all of which aids in earlier arrival at the destination.

Less Deviation from Maximum Speeds

A more intricate use of signaling, to save time for trains in motion, will be appreciated more by technical men than by the passengers. The practicability of operating trains at extra high speeds, 90 to 110 m.p.h., depends on the locomotives and the track structure, while the ability to sustain such high speed for long distances depends primarily on curvature and grade, except at ends of double track, junctions, drawbridges, etc., and that is where another phase of more complete signaling aspects offers the possibility for saving time for trains when in motion, i.e., when slowing down or when re-accelerating to maximum permissible speed.

The higher the normal speed, the greater is the time required for stopping or for reducing to a certain lower speed, as well as for accelerating again to normal speed, and these distances and time increase approximately in proportion to the square of the differences in speed. Signaling that will permit a 10-car light-weight passenger train to reduce speed to 45 m.p.h. for a train length, rather than to 25 m.p.h., will save at least one minute in each such occasion. This result is accomplished by the use of an Approach-Medium aspect on the signal in approach to a home signal displaying a Medium-Clear aspect to direct a train to make a diverging move over a turnout good for 45 m.p.h. With these aspects, a train can be brought up to and through the turnout at the speed for which it was designed. On the other hand, if only the Approach aspect is available on the distant signal, the engineman of a train must reduce to half authorized speed, not exceeding 30 m.p.h., at the distant signal, and proceed prepared to stop short of the home signal. The time saved by the fourth aspect varies depending on the local conditions and the rating of the locomotive in proportion to the weight of the train, but the saving may easily be a minute or more.

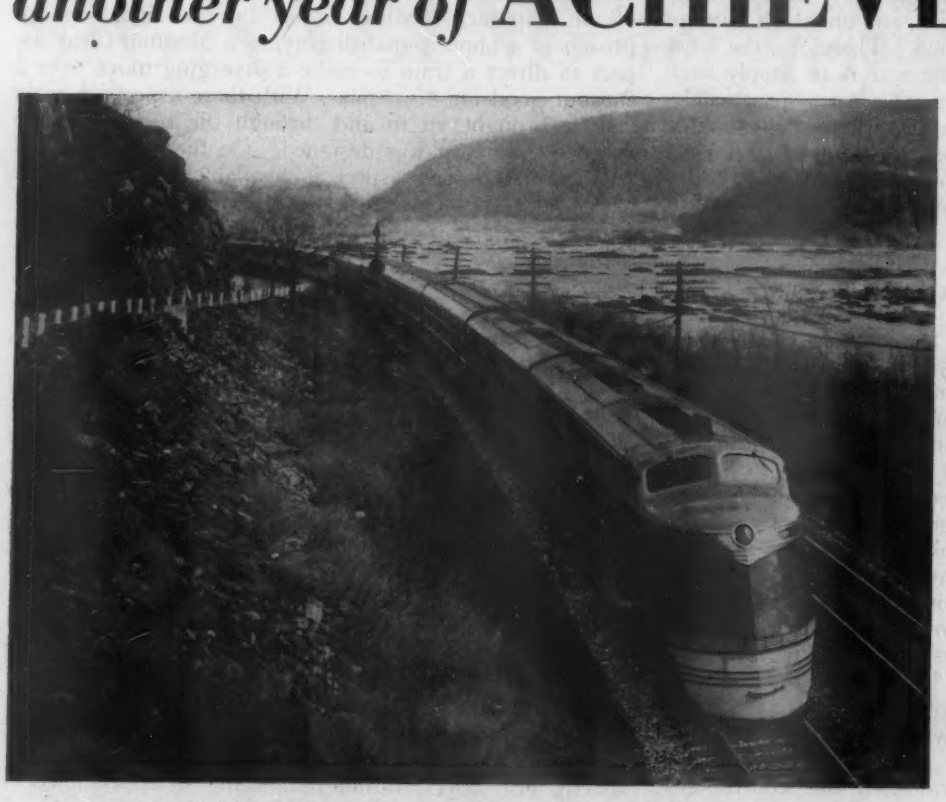
In the conventional aspect system using only red, yellow or green, there is just the one restrictive aspect—yellow—which tells an engineman to stop at the next signal. This necessitates that the block must be situated at maximum train stopping distance, and the result is that following trains running on green signals may have to be spaced five miles or more apart. Therefore, in the approach to terminals or in the vicinity of busy interlockings, drawbridges or any place where other trains ahead may get out of the way quickly while other trains are approaching, the remedy is to use more aspects, which permits the braking distance to be made up of two or more blocks, rather than just one. In numerous instances these so-called graduated speed aspects permit trains to be kept moving at the speeds which are consistent with safety, rather than being stopped unnecessarily at distances from the home signal which are equal to braking distance for maximum speed. Thus the passengers are not annoyed by sudden stops and jerky starts.

Signaling to obviate stopping a 10-car train, as compared with running through at normal maximum speed, will save from four to eight minutes or more, depending on local conditions and the rating of the locomotive with respect to the weight of the train. The use of power switch machines and semi-automatic signals for authorizing train movements saves train stops and delays when entering and leaving passing tracks to the extent that a long heavy passenger train can depart from a siding, run to another station and enter the siding there, in a period of 15 to 20 minutes less than with hand-throw switches.



In C.T.C., Power Switches Save Train Time

another year of ACHIEVEMENT



Chicago-Washington Travel Added Materially to the Heavy Volume



The Streamliners Took Care of More Than Their Share of the Huge Passenger Traffic

Records for volume of passenger traffic handled continue to go by the boards

WRITING the history of railway passenger service in each war year eventually presents some difficulty because the writer runs out of superlatives with which to describe adequately what has been achieved. Records continue to fall right and left as the volume of traffic continues to grow. Passenger traffic officers and railway men generally have been too busy to look back upon their accomplishments in any calm, appraising manner. If they should, they would probably find it hard to believe what their own figures show.

Revenue passengers carried in the first seven months of 1944 were 527,000,000, as compared with 504,000,000 in the comparable period of 1943, a year when all previous records were broken. The 1944 seven-months figure is 87 million more than the total passengers carried in the entire year 1938, which because of the beneficent impact of the streamliners on the public mind, was considered a good year. Total revenue passengers carried in 1943 were 884,655,000; the increase in the first seven months indicates that this figure will be exceeded this year.

The figures become even more impressive when revenue passengers carried one mile are considered, since people these days are making much longer trips than ever before. Revenue passengers carried one mile amounted to almost 56,000,000,000 in the first seven months of this year as compared with 48,000,000,000 in 1943, the former figure being more than twice as great as the total for either of the entire years 1940, 1939 or 1938, and even greater than for the entire year 1942.

Because there are fewer passenger cars today than for more than 40 years, their utilization has had to be vastly increased. In 1938, average revenue passengers per car amounted to only 13.1, and in 1941 was still only 16. It jumped to 23.7 in 1942, to 31.6 in 1943 and to 32.6 in the first seven months of this year.

In addition to being more heavily loaded, what cars there are piled up many more miles. Total passenger train car miles were 4,334,861 in 1943, as compared, for example, with 2,843,094 for 1938. In the first seven months of this year, a figure of 2,648,778 was piled up, indicating that last year's fine performance will be excelled this year. Such figures portray the results of a great deal of study by railway men of ways and means for getting cars back into trains and on their way in the shortest possible time.

This year, the per cent unserviceable of total passenger locomotives owned is running at an average of about 12.5 per cent, or roughly half of what the figure was in 1940, and this despite the pounding that passenger locomotives have been taking for nearly three years. Locomotives are not only being kept out of the shop more but are also being turned and given running repairs faster while they are in service and are pulling longer trains. In 1938 average cars per train was 7.91. It was 9.96 in 1943, and 10.23 in the first seven months this year.

In the final analysis, it is the average revenue passenger miles per train mile that shows graphically the increased utilization of both locomotives and cars. This average in 1938 was only 54.5. It had jumped to 124.9 by 1942, and to 188.6 in 1943. This year it is averaging 199, or nearly 400 per cent more than in 1938. This average really supplies the answer to the question of how the apparently impossible has been done.

Individual Railroad Performance

To illuminate these overall figures, certain statistics as to individual railways are given in the following:

Alton—Gross passenger revenue for the first eight months amounted to $6,374,734, an increase of $854,458 or 16 per cent over 1943.

Atchison, Topeka & Santa Fe—Revenue from passenger fares increased 17.3 per cent in the first seven months of 1944 as compared with 1943, while total passenger revenue increased 18.7 per cent in the same period. Because of an appreciable decline in the volume of military traffic, the increases were leveling off, having been 33.7 per cent in January, 1944, and only 3.9 per cent in July, 1944.

Baltimore & Ohio—Passenger revenue in the first eight months of 1944 amounted to $33,427,332 as against $25,610,465 for the same months of 1943, an increase of $7,816,867 or 30 per cent.

Boston & Maine—Passenger revenue of $9,058,120 for the first six months of 1944 was only 2.5 per cent higher than 1943 but 172.8 per cent above 1940. Total passenger miles increased 4.7 per cent in the same period and 150.2 per cent over 1940. The number of revenue passengers decreased 1.8 per cent as against 1943, but still represented an increase of 73.3 per cent over 1940. Passenger train miles compared with 1940 increased only 5.4 per cent despite the large increase in passenger traffic and passenger miles.

Central of Georgia—This company has shown increases ranging from 1.28 per cent to 26.01 per cent in the number of passengers handled in the first six months of 1944 as compared with 1943 and increases in revenue of from 4.74 per cent to 46.37 per cent.

Chesapeake & Ohio—In the first six months of 1944 passenger revenue increased 25 per cent over 1943, in which year the previous record passenger revenue was taken in.

Chicago & Eastern Illinois—Passenger revenue for the first six months of 1944 amounted to $4,347,429 as against $3,659,512 in the same months of 1943. In August passenger revenue rose to over $700,000, the heaviest passenger business in the history of the railway.

Chicago & North Western—In the two weeks' period August 1 to 14, inclusive, 1944, passenger revenue amounted to $1,709,900 or a $141,000 increase over 1943, and from January 1 to August 14, inclusive, the total revenue amounted to $23,196,600 or an increase of $3,352,200.

Chicago, Burlington & Quincy—In the first six months of 1944 compared with the same period of 1943 revenue passengers carried increased 12 per cent, revenue passengers carried one mile increased 44.1 per cent, while passenger train miles increased only 5.6 per cent. Revenue passengers per train increased 36.5 per cent and revenue passengers per car 24 per cent.

Chicago, Milwaukee, St. Paul & Pacific—For the first eight months of 1944 passenger revenues showed an increase of $2,692,000 over the same period of 1943 or 13.61 per cent.

Chicago, Rock Island & Pacific—In the first seven months of 1944 passenger miles reached an all-time high of 1,447,308,351, an increase of 150,000,000 over the comparable period of 1943. The number of passengers carried increased 6.4 per cent over 1943 in the same period. Total passenger train miles, however, increased only 3.5 per cent.

Delaware & Hudson—Passenger revenue for the first six months of 1944 was 22.7 per cent greater than in the same period in 1943. The increases range from 5.7 to 51.6 per cent per month.

Erie—Increased passenger traffic on this road in the first eight months of 1944 amounted to 25 per cent over the corresponding period of 1943, which, in turn, was an increase of 50 per cent over 1942.

Florida East Coast—Because of the decrease in special military movements revenue passengers carried in the first six months of 1944 showed a decrease of 4.07 per cent despite a 37.9 per cent increase in the month of January, 1944.

Great Northern—For the first seven months of 1944 passenger revenue was $13,504,406, an increase of $2,296,885 or 20.5 per cent over the same period in 1943.

Illinois Central—The increase for the first eight months of 1944 over the same period in 1943 amounted to 21 per cent. However, the increase was declining, having been 34 per cent in April and only 7 per cent in August.

Kansas City Southern-Louisiana & Arkansas—Passengers carried the first six months of 1944 were 910,396 as compared with 836,194 in the same period in 1943, an increase of 12 per cent. Revenue passenger miles increased 21 per cent in the same period and passenger revenues 24 per cent.

Lehigh Valley—Despite the fact that the increase in passenger traffic in 1943 over 1942 was 86.2 per cent, for the first eight months of 1944 a further increase of 22.3 per cent was shown. This year fluctuation has been from a decrease of 3.7 per cent in one month to an increase of 78.9 per cent in another month.

Louisville & Nashville—Total number of passengers handled in the first six months of 1944 amounted to 6,216,048, which was an increase of 15.6 per cent over the same months of 1943. This increase represented a 17.7 per cent rise in coach passengers but only a 3.4 per cent increase in Pullman passengers. Passenger revenues in the first six months amounted to $22,830,010, which was an increase of 3.7 per cent over last year. To handle this increased business, there was an actual decrease in passenger



The Number System in Ticket Offices Has Speeded Ticket Selling

train miles of 2.7 per cent, but the increase in average revenue per passenger train mile was 6.4 per cent.

Nashville, Chattanooga & St. Louis—This road for the first seven months of 1944 shows a 7.73 per cent decrease in the number of coach passenger miles but a 13.01 per cent increase in the number of Pullman passenger miles.

New York Central—For the first seven months of 1944 passengers carried amounted to 47,539,174, an increase of 6.8 per cent over 1943 and 38.8 per cent over 1942 for the comparable period. In the same time passenger miles showed an increase of 15.5 per cent over 1943 and 98.2 per cent over 1942, while passenger revenue increased 21.6 per cent over 1943 and 90.8 per cent over 1942.

New York, New Haven & Hartford—For the first seven months of 1944, 39,306,374 passengers were handled, an increase of 2.6 per cent. Local travel other than commutation decreased 1.4 per cent, inter-line travel increased 16.5 per cent and commutation increased 4.8 per cent, all as compared with the corresponding months of 1943. The average distance passengers traveled was 55.12 in the first seven months of 1944, an increase of 5.7 per cent. Passenger train miles operated increased only 5.7 per cent and passenger car miles 6.6 per cent.

Norfolk & Western—Total passengers handled amounted to 2,538,996, an increase of 11.9 per cent over the first six months of 1943. In the same period total passenger miles increased 24.7 per cent, total revenue 20.2 per cent, and average haul per passenger rose from 153.7 miles to 171.3 miles. In the meantime, passenger train mileage increased only 12.7 per cent.

Northern Pacific—For the first eight months of 1944 passenger revenues amounted to $14,799,502 as compared with $10,638,973 or an increase of 39.1 per cent.

Pennsylvania—While the January, 1944, increase in passengers handled was 24.6 per cent over the same month last year, only 2 to 3 per cent increase was shown in July, August and September. However, on one day, July 1, 1944, on the New York division 232,107 passengers were handled.

Pere Marquette—This railway showed an increase in passenger earnings for the first eight months of 1944 over 1943 of 14 per cent.

St. Louis-San Francisco—Passenger revenues in the first seven months of 1944 were $14,449,646, an increase of $1,624,609 or 12.7 per cent over 1943 when the revenues were $12,825,037.

Southern—In 1943 passengers carried one mile were 2,605,816,163, an increase of 45.7 per cent over 1942 and an increase of 63.3 per cent over 1918 and 438 per cent over 1939. In the first seven months of 1944 an increase of 6.97 per cent was shown over the same period of 1943. The average trip has increased from 119.05 miles in 1939 to 177.52 miles in 1943 or an increase of 49 per cent. For the first seven months of 1944 this has been increased still further to 209.1 miles.

Southern Pacific—Total passenger miles were 4,885,713,000 in the first seven months of 1944 as compared with 4,053,273,000 in 1943, an increase of 20.5 per cent. The total for the first six months of 1944 represented a 522 per cent increase over the comparable period of 1940. Meanwhile, total passenger car miles for the first seven months of 1944 totaled 145,667,569, an increase of only 10.4 per cent over the first seven months of 1943.

Texas & Pacific—In the first eight months of 1944 the volume of travel increased 7 per cent over 1943 and 200 per cent over 1920, which was the previous all-time record prior to the present war.

Western Pacific—For the first seven months of 1943 passenger revenues increased 61 per cent as compared with the same period of 1943, while dining car revenues increased 44 per cent and passenger train miles increased only 26 per cent. These increases ranged from 9 per cent to 208 per cent per month.

Comparative Travel Safety

A considerable hullabaloo has been created by certain parts of the press because of recent unfortunate railway accidents. It is inevitable that, as railway traffic increases, accidents will also increase, but the relative safety may remain the same or actually show a marked improvement. This has been the case in railway passenger operation. The accompanying table, taken from Interstate Commerce Commission figures, refutes the critics completely. It shows that fatalities per hundred million passenger-miles have been well below the average for the last 20 years and the non-fatal injuries are by far the lowest on record.

A comparison of railway safety in this war as compared with World War I brings forth even more striking refutation. In 1918 the railways piled up 43 billion passenger-miles and 409 billion ton-miles. In 1943 the figures were 88 billion and 730 billion respectively, or 100 per cent more passenger service and 80 per cent more freight service. In 1918, 471 passengers were killed and 3,419 railway employees lost their lives while on duty. In 1943, with much more transportation service rendered, only 278 passengers died in railway accidents and 1,072 employees were killed.

In other words, railway passengers are three times as safe now and railway men twice as safe as they were during World War I.

Casualties to Passengers on Trains

All Steam Railways in the United States

Year	Casualties per hundred million passenger-miles: Fatalities	Nonfatal injuries
1922	.397	16.545
1923	.259	14.658
1924	.291	14.114
1925	.362	13.283
1926	.334	12.051
1927	.142	11.021
1928	.170	10.414
1929	.225	11.965
1930	.123	9.443
1931	.109	9.137
1932	.076	10.690
1933	.232	12.048
1934	.149	10.349
1935	.097	10.114
1936	.076	10.913
1937	.073	10.156
1938	.319	10.491
1939	.119	11.020
1940	.315	10.623
1941	.116	9.916
1942	.169	6.317
1943	.288	5.719
1st 7 months:		
1943	.094	5.919
1944	.147	4.467

Source: Interstate Commerce Commission

Excellent Equipment Use

The huge traffic outlined above was handled safely with far fewer passenger cars available. In 1920 the Class I railways and the Pullman Company operated 41,733 passenger-carrying cars. By July, 1944, the ownership materially declined to less than 30,000 cars. Solving the problem of handling a vastly increased traffic with a declining supply of equipment required the utmost ingenuity on the part of railway officers. Of course, a large percentage of the increased number of persons handled was taken care of by the increase in the average number of passengers per car, but this did not supply the entire answer, by any means. The greatly increased utilization of passenger equipment was brought about by far faster turn-arounds than would previously have been believed possible. The organization of "commando" squads of car-cleaners and such devices as sending cleaners out to clean the cars while they were still en route have helped. So-called good housekeeping campaigns have been inaugurated on several railways to insure that, despite its intensive usage and the speed of its turn-around, passenger equipment is kept in the best possible state of cleanliness.

In addition to the efforts made by individual railways to promote car utilization, the Passenger Car section of the Car Service division of the A. A. R. has continued and expanded its efforts in handling passenger car



When the Highways Failed, the D. & R. G. W. Came to the Rescue With a Narrow-Gage Passenger Train Through the Black Canyon of the Gunnison River

utilization on an overall basis. This section checks the steadily increasing movement of passenger cars on foreign lines closely and hastens their return to the owners.

It has continued its successful efforts to secure the transfer of equipment from less essential to more essential service. An example was the transfer and lease of 40 Central of New Jersey coaches to the Southern Pacific and the Atchison, Topeka & Santa Fe. This followed the suspension of a number of suburban services on the former railway under orders of the O. D. T. Several coaches satisfactory for main line service have also been transferred from branch lines on which they were previously operated and replaced by coaches of an older vintage.

O. D. T. Continues Efforts

The O. D. T. has continued its efforts to reduce unnecessary travel, and Director Johnson has been successful in obtaining the postponement of hundreds of conventions; but, because many conventions of doubtful value are still held, he has announced there will be no relaxing of these efforts. The railways have cooperated by cancelling numerous conventions which railway officers would normally attend.

The O. D. T. has also reduced materially the travel to sports events. Such features as the Kentucky Derby, the World Series baseball games and the Army-Navy football game normally attract people from all over the country, but this year attendance was largely confined to persons living in the immediate vicinity. The long training trips of professional baseball teams to Florida and California were again canceled this year.

Ticket Office Practices

Vacation travel was discouraged as much as possible. In the case of travelers returning from Florida last year, the O. D. T. authorized the operation of additional coach trains by the Seaboard and the Florida East Coast-Atlantic Coast Line. Even though there had been loud complaints about winter vacationists being stranded in Florida, the patronage of these trains was unexpectedly light and they were soon taken off by orders of the O. D. T. This year, Col. Johnson has warned Florida vacationists that there will be no such trains operated; and if they elect to go to Florida, they can get back as best they can.

In the three years during which the railways have been called upon to handle the mass of humanity crowding their passenger trains, a number of devices and methods have been adopted to insure smoother handling of the passenger from the time he first considers his trip until he finishes it. For a few years prior to the war a definite trend was noticeable toward streamlining ticket offices and ticket office procedure. This has been stepped up during the war, a number of new ticket offices having

been established and a very large number of ticket clerks having been recruited and trained. One of the things that has relieved congestion in ticket offices is the widespread use of advance telephone orders which are made up and held at the "will call" desk in the ticket offices for such passengers as are forehanded enough to adopt this procedure. In many large ticket offices the passenger is greeted upon entering by a "floorwalker" whose duties are to see that passengers merely asking information or timetables are taken care of without disturbing the busy ticket clerks. Widespread use has been made of the card system for waiting on prospective ticket purchasers. Under this system each person upon entering takes a numbered card from the rack and waits until his number is called before approaching the ticket clerk. This saves jostling and crowding and insures each passenger of being waited on in his proper turn.

The methods of making out tickets and accounting in ticket offices have received much attention and a much greater efficiency has been attained now that ticket forms are watched much more closely. Many more destinations are printed on the tickets, thus avoiding the necessity of writing them in by hand and, on certain railroads, the Southern and Milwaukee among them, ticket printing machines have been established which permit the printing of tickets in the ticket office without delays. Getting ticket refunds from unused tickets is also a much simpler process than formerly, and passengers desiring such refunds no longer clog the ticket offices. The Southern has installed modern accounting machines so that even its busiest ticket offices can prepare running reports of revenue, federal taxes, etc., and in a few minutes at the end of the day make the necessary reports.

The reservation bureaus have been given a thorough modernization to meet the heavy demands upon them and many devices have been used to make the diagrams more readily available. The Santa Fe, for example, has set up octagonal shaped reservation desks with revolving diagram turrets where 12 reservation clerks are seated, all of whom have access to the diagrams without leaving their seats. Reservation bureaus and ticket offices have also installed teletypes to supplement wire facilities.

Handling at Large Stations

In many large stations the prospective traveler is now greeted by a traffic director who guides him to the proper window, and, in addition to a greater number of ticket windows, most of the large stations now have separate windows for Pullman tickets, reserved seat coach tickets, unreserved coach tickets, military travel, etc. Vastly increased baggage and checking facilities have been established in every large station, including the installation of batteries of checking lockers which save manpower and congestion at the parcel checking windows. In many stations facilities such as nursery rooms have been set up for mothers with children.

The Baltimore & Ohio and some other roads have met success in instructing their agents and passenger representatives to inform patrons as to the other possible trains that may be used instead of the extremely crowded ones. The Pennsylvania and other roads in conjunction with the Pullman Company have made a thorough study of the causes for duplicate sales of Pullman space and have undertaken an intensive program to remedy this particularly annoying feature of ticket sales. Several union stations and large stations of individual railways have installed loud speaker systems for train announcements, paging passengers and a variety of other uses.

Several of the roads have traveling representatives on all long distance trains to take care of the passengers while en route. The Southern Pacific, for example, has women passenger aides, who are given first aid instruction as part of their training, and whose first duty it is to make women and children comfortable on the trains. This road also has train service agents whose duty it is to check the work of the chair car porter and the service generally. These latter are operating department employees and report directly to the train conductor.

The Southern Pacific has also improved and extended its coach assignment plan. Passengers are required to make advance reservations for coach space on long distance trains on the Pacific lines. Space assignments are given to each office selling tickets and the number of passengers is rigidly limited to the seating capacity of the train. The assignment checks do not specify individual reserved seats, merely designating the train, and their issuance is to prevent selling more tickets than there are seats on the train. Servicemen are given preference, and not infrequently no space on a train is assigned to civilians because of heavy furlough movements. The S. P. has also inaugurated a system of making Pullman reservations on a preference basis, preference being given first to military traffic, next to essential war industry and essential government travel.

Dining Car Service

Because of manpower shortage, on many of the long distance trains in the West only two meals a day are served. Breakfast is served until just before noon and the serving of dinner begins in the early afternoon. All railroads have rebuilt their dining cars to supply increased seating capacity and many have converted baggage cars into dining cars. Waiters' schools have been established at many points and, particularly in the East, women are successfully used on diners as waiters and cooks. Plate service has been established in many cases to speed up operations; also sandwich service, so that a number of people may be fed without entering the already crowded diner. Box lunches are available in many diners and also at stations. In this manner several of the problems brought about by an inadequate supply of dining cars have been at least partly solved.

The ability to supply service when other means of transportation fail was indicated in June and July, 1944, on the Denver & Rio Grande Western narrow gage line between Gunnison, Colo., and Montrose. No passenger service had been operated on this line for many years, although it traverses the spectacular Black Canyon of the Gunnison river, which is one of the outstanding scenic sights of the West, but is virtually inaccessible by highway. The main East-West highway between these cities was severed for many weeks by the washing out of a large bridge, thus leaving a large area in central Colorado practically without transportation service. The D. & R. G. W. rose to the emergency and operated a passenger train over the narrow gage line for several weeks until the highway bridge could be rebuilt.

Tenth Streamliner Anniversary

Among the outstanding events of the year were celebrations staged by the Union Pacific and the Burlington in commemoration of the completion of the first decade of the streamliners and of Diesel-electric locomotive operation on passenger trains. The *Railway Age* for April 22, 1944, was largely devoted to a summation of the advent and development of the streamliners during the last decade.

TROOP TRAFFIC *still heavy*

Volume, now running below 1943 monthly peaks, is tremendous, and consist has changed with more wounded servicemen and prisoners of war handled



Solid Train of Troop Sleepers Winds Way Through Sierra Nevadas on Lines of S. P.

ORGANIZED troop movements continued during the past year to receive the same smooth and efficient handling which had long before become a railroad habit, acquired as a result of the close and sustained cooperation between the carriers and the Passenger Branch of the Army Transportation Corps' Traffic Control Division. While the volume in recent months has been below the monthly peaks of a year ago, it has remained tremendous as measured by any other standard. And the consist of the traffic has changed, with more wounded servicemen and prisoners of war being handled.

Up to October 1, a total of more than 25,750,000 persons had been handled in organized movements controlled by T. C. D. The volume in recent months has been running to about 800,000, compared with 1943 monthly peaks as high as 900,000 to 1,000,000. During the first 19 months of the present war, the railroads carried 21,754,305 troops. The comparable total for World War I, in which the United States participated for a period of 19 months, was 8,874,708.

T. C. D.'s Passenger Branch has jurisdiction over all organized movements in groups of 40 or more. Thus the foregoing figures do not include movements of smaller groups where control remains decentralized in the Army's local field transportation officers. This jurisdictional boundary was fixed at the point where more than one Pullman car would be required for a movement. By assigning two to a lower berth and one to an upper, the Army transports 39 troops in a single tourist sleeper. Neither do the figures include military personnel on furlough, traveling at their own expense.

Wounded servicemen and prisoners of war are, however, included in the "troop movement" figures, as are all other movements controlled by the Passenger Branch—such as those of enemy aliens, evacuees, official movements of War Department personnel, etc.

As indicated above, the increased number of wounded servicemen requiring rail transportation in this country upon their return from the battlefields was the principal new development in the Passenger Branch's activities of the past year. And every effort has been made to make the travel of these wounded as comfortable as possible. "We view that traffic as the most important traffic we handle, giving it first priority and providing the patients with the best of everything," is the way Colonel I. Sewell Morris, chief of the Passenger Branch, puts it.

A Hospital Evacuation Unit of the Branch was activated last December. It is headed by Captain A. A. Anderson, former general agent of the Northern Pacific at Duluth, Minn. The Unit's exclusive control of the Army's 120 hospital cars and 40 hospital kitchen cars has resulted in pushing up the average loaded mileage of this fleet from 50,000 miles a month to 300,000 miles. An additional 100 hospital cars are now under construction. Meanwhile, wounded servicemen traveling in regular railroad equipment also ride in air-conditioned cars, with adequate mess facilities, and on expedited schedules. Road speeds of all hospital trains and trains containing hospital cars have been kept at levels consistent with full comfort for the patients, but the trains and cars have been moved through gateways without delay.

Wounded Handled without Complaint

Like all others in T. C. D., the Hospital Evacuation Unit has fully-cooperative working arrangements with the railroads, through the Association of American Railroads' Military Transportation Section, headed by A. H. Gass and located at T. C. D. headquarters in Washington's Pentagon Building. It also maintains close

liaison with the office of the Surgeon General of the Army, getting advance information as to hospitals to which wounded arriving on hospital ships will be assigned. And the traffic has thus far been handled without any complaint from the Surgeon General.

Plans for handling the hospital cases resulting from the invasion of Europe were prepared well in advance of D-Day. As noted in the *Railway Age* of May 20, page 998, the requirements of the Army in that connection were laid before the railroads at a Chicago meeting early in that month; and the railroads gave assurances that the job would be done.

Generally, the movement involves transfer by ambulance or bus (but in some cases by rail) from hospital ships to debarkation hospitals located at the ports. At these debarkation hospitals the patients are classified and sent by rail to general hospitals inland. Thereafter they may again be transferred to other institutions for specialized treatment. Solid hospital trains are dispatched from the debarkation hospitals to diversion points where they are split up, the individual cars proceeding to various destinations. Then there is the return movement of the nurses and other attendants. To arrange for the latter, and otherwise cooperate with the local transportation officer in arranging movements of patients to other hospitals, a railroad representative has been assigned to every general hospital.

Evictions from Berths "Practically Negligible"

When the plans for handling this traffic were formulated, it was anticipated that other travelers might occasionally be evicted from berths or rooms in order to give the wounded first priority. And the railroads agreed to accord that priority, even though it might involve not only evictions of individuals, but removal of cars or whole trains from scheduled services. This commitment of the carriers was implemented by Interstate Commerce Commission Service Order No. 213, issued last June 20 and still in effect. However, the travel requirements of the wounded have been so well anticipated and the arrangements so well worked out that evictions have been "practically negligible." And no scheduled services have been canceled, although some roads have voluntarily set aside space in order to be fully prepared to meet emergency situations.

Prisoner Trains

Prisoners of war (unless they are hospital cases) move in coaches, with the doors and windows secured and guards in each car. They are usually carried on special trains, and fed from kitchen cars. When coaches carrying prisoners are included in regular trains, they are blocked off from cars carrying the traveling public. At all stops a screen of military police is thrown around prisoner trains, and an effort is made to have all such trains arrive at their destinations during the daylight hours. The movement of inbound prisoners from the ports has lately dropped off a bit, but the traffic nevertheless remains heavy, due to movements about the country so the prisoners may be used for work on farms and at certain Army installations.

Meanwhile, the regular troop movements have proceeded apace without important change from the plan described in detail in the article entitled "Troop-Train

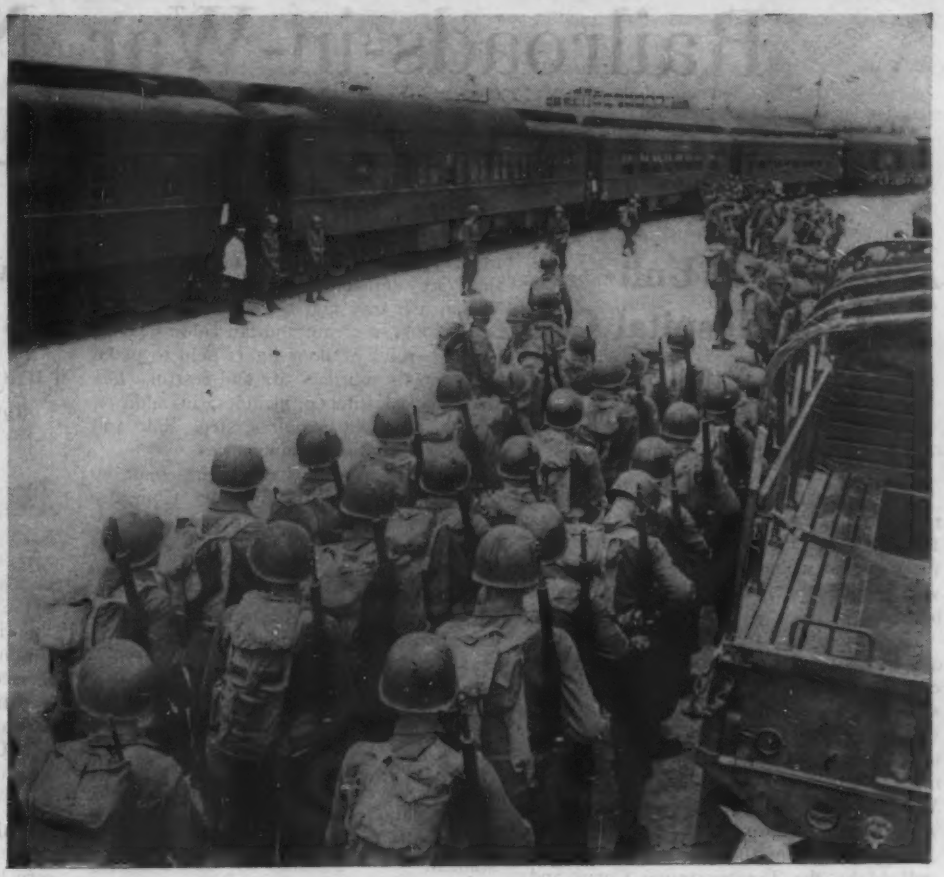


U. S. Army Signal Corps Photo

Litter Cases Being Transferred Direct from Ship to Hospital Train at Charleston, S. C., Port of Embarkation

Cars Get Little Rest," which appeared in the *Railway Age* of April 15, page 719. As there noted, T. C. D., for some time, has had authority to fix, within the limits of military necessity, the actual dates and times of troop movements as determined by the availability and economical use of railroad equipment. Previously, it was required to arrange for movements as directed by the officers ordering them, irrespective of the equipment situation.

The authority has been used effectively to set up T. C. D.'s equipment conservation plan, which contemplates such precise coordinating and matching of movements as to insure that a car completing one job is thereby placed for the next, with deadhead mileage reduced to the absolute minimum. From November, 1942, through September, 1944, the plan saved some 25,500 sleeping cars, giving berths to about 890,000 soldiers who would have made their night-time journeys in coaches if previous utilization conditions prevailed.



U. S. Army Photo

Regular Troop Movements Remain Heavy Though Below Monthly Peaks of a Year Ago

Here again cooperation between the railroads and T. C. D. has remained the keynote. Mutual problems and ideas for improved procedures come up for discussion at general meetings held regularly in the various service command areas. When a division is to be moved, T. C. D. frequently receives as much as 30 to 90 days' advance notice. It thereupon assigns one of its officers to arrange and preside over a special meeting attended by the Army's local transportation officer, and representatives of the origin territory's passenger association, the A. A. R., Pullman Company, and interested railroads. There the movement is mapped out, including routes, schedules of each train, consists of trains, etc., the T. C. D. officer drawing from the various railroad representatives commitments as to what their roads can handle.

Army Reservation Bureaus

With respect to smaller movements under its jurisdiction, T. C. D. requires 72 hours' advance notice from local transportation officers, except in cases of emergency. The railroads are given "almost unlimited" authority to consolidate these smaller movements in order to save crews, cars, or motive power, consolidation being prevented (or required) only on grounds of military necessity.

In addition to its handling of the troop movements, the Passenger Branch performs various other functions in connection with the travels of Army personnel. Among them is the set-up of Army Reservation Bureaus located in 40 cities throughout the country. These bureaus were established in order to assist in the procurement of reservations for individual officers and other War Department personnel traveling on business; for furloughed men returning from overseas; and for military or other representatives of the other members of the United Nations.

Pentagon Has Complete Travel Bureau

The bureaus were considered necessary to protect such travelers, whose plans must necessarily remain unpredictable, in a market where the general public can reserve space 30 days in advance. The bureau at Pentagon has been called the "best travel department in the world." Located in a compact section on one floor, it is equipped to fit out the prospective traveler in complete fashion, making reservations, issuing transportation requests and travel orders, and arranging for passports, visas, identification cards, passport photos, etc. The assistance of the railroads, airlines and bus lines in installing consolidated ticket offices has greatly facilitated the flow of essential War Department traffic.

Looking forward to V-E Day, the Passenger Branch has framed tentative plans for handling troop movements following the collapse of Germany. It is anticipated that this load will be extremely heavy, moving in peaks and requiring all possible ingenuity to service it properly. It is further expected that many procedures may have to be altered quickly, and the traffic handled even more expeditiously than present troop movements. However, T. C. D. anticipates no serious difficulties, its experience with railroad performance to date being such as to inspire full confidence that the carriers' role in connection with the partial demobilization and reassignment of forces will be executed with characteristic efficiency.

Railroads-in-War News

Army Shows Unit-Type Hospital Car

Built by a.c.f, this new car provides for all possible comforts and care

The first of the U. S. Army's new unit-type hospital cars intended to provide comfortable, convenient and efficient attention for sick and wounded being moved by rail was displayed at Washington on November 13.

High-ranking Army, Navy and Marine officers as well as representatives of the civilian branches of the government inspected the car at that time. The display was also open to the public and the Treasury Department used the exhibition as a means of calling attention to the need for War Bond purchases during the drive which opens on November 20.

One hundred of the new cars have been ordered by the Transportation Corps and delivery will be completed in March. These cars, which have accommodations for thirty-eight patients and attending personnel, will supplement the existing fleet of hospital cars most of which have been converted from standard passenger equipment. The new hospital car, which costs approximately $57,000, was designed by the Office of the Chief of Transportation, the Office of the Surgeon-General, and the American Car and Foundry Company. It has two rows of triple tier beds, two compartments with three beds each, a kitchen equipped with refrigeration, an ice cream cabinet, a coal range and necessary cooking utensils and supplies; a receiving room with four-foot side doors for loading and unloading litter patients; two roomettes each with a toilet and shower for attending officers or seriously ill patients, and a baggage compartment.

The principal innovation in the new car is the kitchen. Heretofore the sick or wounded soldier enroute to the hospital best equipped to administer the definitive treatment required, could not always depend upon the railroad dining car facilities if he needed a special diet. There were also times when hospital cars or hospital sections of trains had to wait on sidings for the arrival of railroad dining cars. The new unit type cars will eliminate these inconveniences, and will insure proper food being served at the proper time.

In line with the War Department's policy of providing everything possible for the care and comfort of battle casualties, the new cars are equipped for comfortable travel. Glennon-type steel framed beds are adjustable. Unoccupied center bunks can be dropped to provide seating accommodations for ambulatory patients. Each bed has an ash tray and a glass holder. Carpeted floors, a cream and tan color scheme, and two rows of floor lights help to make the patient's journey safe and restful. The steel floored kitchen includes, in addition to the range, a stainless steel sink and special ventilation equipment.

The new cars which are being built by the American Car and Foundry Company at St. Charles, Missouri, are painted Army olive drab and display hospital and Red Cross markings. They are mounted on easy-riding six-wheel trucks, are of all-steel construction and are equipped with ice-activated air conditioning and automatic heat control devices.

Advisory Meetings Scheduled for December and January

The following regional advisory board meetings have been scheduled for December and January:

Central Western	December 5-6	Lincoln
Southeast	December 6-7	New Orleans
Ohio Valley	December 11-12	Cincinnati
Atlantic States	January 10-11	Philadelphia

The executive and railroad contact committees of the Allegheny board will hold a joint meeting in Pittsburgh, Pa., on December 14.

* * *

At the Army's Showing of the New Hospital Car

(From left to right)—Maj. Gen. C. P. Gross, Chief of Transportation, Mr. Charles J. Hardy, Chairman of the Board, American Car and Foundry Company, Brig. Gen. Burton O. Lewis, Assistant Chief of Transportation, Brig. Gen. Edward T. Witsell, Director Military Personnel Division, Adjutant General's Office, and Col. J. H. Hills, Executive Officer, Adjutant General's Office.



How Army Railroading Is Organized in U. S.

Function is training men for overseas duty under combat conditions

It is just about two and a half years ago—on May 15, 1942—that the first headquarters of the Military Railway Service was established in St. Paul, Minn., under command of Brigadier General (then Colonel) Carl R. Gray, Jr., being made responsible for the basic military and technical training of the personnel of units of the Service. Today, troops of the M. R. S. are operating in Iran, India, Italy, Sicily, North Africa, England, France, Alaska, Canada, New Caledonia—in fact, on five continents, and acquitting themselves with distinction on all of them.

Training Points—The units were sponsored by various Class I railroads and were located for training at points selected by the government. In the beginning, training camps were established at Camp William C. Reid, Clovis, N. M., on the Santa Fe; Camp Shelby, Miss., on the Southern; Camp Thomas A. Scott, Fort Wayne, Ind., on the Pennsylvania; Camp Claiborne, La., on the Claiborne-Polk (military railroad) and the Missouri Pacific; and Camp Millard, Bucyrus, Ohio, on the New York Central. At the outset, the units were moved to those points on the date of activation for basic training, which was followed by technical training.

On November 16, 1942, the Military Railway Service was removed from the Corps of Engineers and placed under the



Official U. S. Army Signal Corps Photo

Officers of Military Railway Training Division with Visiting British Officer, Colonel Swaine, at New Orleans

(*Seated, left to right*)—Maj. W. F. Henninger (C. B. & Q.); Lt. Col. R. Swaine (Royal Engineers); Col. Charles E. Hise (C. & N. W.); Maj. R. M. Montgomery (U. P.); Maj. H. C. Stull (So. Pac.); Maj. J. F. O'Connell (N. Y. C.). (*Standing, left to right*)—1st. Lt. D. R. Jacobson (Soo Line); Maj. Earl K. Hobbs (So. Ry.); 1st Lt. L. G. Redmon (L. & N.); 1st Lt. E. H. Abramson (M. & St. L.); 2nd Lt. C. T. Bradshaw (C. B. & Q.); and Capt. F. E. Short (S. L.-S. F.).

jurisdiction of the Transportation Corps. The Office, Chief of Engineers, had been charged with the responsibility for the affiliation, organization, constitution and activation of Military Railway Service units. This responsibility was transferred and continued by the Military Railway Branch of the Rail Division of the Office of the Chief of Transportation.

On January 27, 1943, General Gray proceeded overseas with an advance detachment, and on April 18, 1943, Military Railway Service Headquarters No. 1, Fort Snelling, Minn., was transferred overseas. To supervise the technical training of Military Railway Service units in the Zone of the Interior, the Chief of Transportation created the office of the Director of Railway Training and assigned it to the New Orleans Port of Embarkation. Colonel (then Lieutenant Colonel) Charles E. Hise, formerly of the Chicago & North Western, was designated Director of Railway Training and placed in charge of the technical training of all Military Railway Service units within the continental limits of the United States.

Technical Training Sites—The units organized after this date have been activated and have received basic training either at Camp Plauche, New Orleans, or Fort Sam Houston, Tex. After completion of basic training, they are moved to points on various railroads for technical training. The cooperation of the railroads and the assistance of the railroad officials and employees in the technical training of these units, has been repeatedly commended by the Chief of Transportation, Major General Charles P. Gross.

In addition to the technical training sites already mentioned, the following have been added: Fort Snelling, Minn.; Camp Joseph T. Robinson, Little Rock, Ark.; Camp Jesse Turner, Van Buren, Ark.; Camp Cushing, San Antonio, Tex.; Fort Benning, Columbus, Ga.; Jefferson Barracks, St. Louis, Mo.; Lincoln Army Air Base, Lincoln, Nebr.; and Harrisburg Academy, Harrisburg, Pa.

Although set up along the usual military lines, the M. R. S. is patterned after standard railroad organizations. The basic unit is the railway operating battalion, which is made up of four companies, organized to operate a division of about 100 miles of railroad and to keep rolling stock and right of way in repair. In addition to operating battalions, there are also shop battalions, which correspond to backshop organizations of civilian railroads. Their mission is to maintain the motive power and rolling stock and make heavy repairs thereto.

Other Types of Units—Besides these organizations, Military Railway Service also has railway grand divisions, which are supervisory units corresponding to the general superintendent's office on a civilian railway. They have under their supervision two or more operating battalions, one or more railway shop battalions and such other units as may be required.

Other units which have been activated since the training has come under the supervision of the Director of Railway Training are diesel shop battalions, base depot companies, railway workshop platoons (mobile), hospital train maintenance sections, hospital train maintenance platoons, railway transportation companies, railway operating companies, additional railway track platoons, and four special railway technical training schools.

These schools were located at Camp Claiborne, La.; Camp Shelby, Miss.; a school for training railway operators to handle train orders by telephone at Fort Sam Houston, Tex.; and an Army Service Forces Training Center at Fort Francis E. Warren, Cheyenne, Wyo.

At Camp Claiborne, men are trained on the Claiborne-Polk Railway, which was completed on July 11, 1942, by the 711th Railway Operating Battalion. The final and golden spike marking the completion of the railroad and highlighting the celebration program was driven by General Gray.

World's Worst R. R.—The construction of this railroad was undertaken as a training project by the Corps of Engineers for the purpose of connecting camps Claiborne and Polk. As construction of the 50-mile long railroad was hasty and of emergency nature, there is no doubt but that, from a railway efficiency point of view, it is entitled to characterization as "the worst railroad on earth," bestowed on it by a writer for the Saturday Evening Post.

However, because of the temporary nature of the railroad's construction, the maintenance problem has proved to be an excellent training medium for M. R. S. operating battalions which are called on to conduct emergency railroading in the theaters of action. For this reason, Colonel Hise, and other Transportation Corps officers decided to let the battalions in training on this railroad contend with these conditions rather than remove the emergency features and bring the railroad up to standard grade.

The equipment in use on the Claiborne-Polk has been of a class which compares favorably with the general condition of the railroad itself, thus affording the opportunity for student engine and shop men to learn what to do in unprecedented circumstances. Those training in the maintenance of way department have learned to exercise their ingenuity and resourcefulness in surmounting the various obstacles that develop in the operation of such a railroad. According to those who have had experience in theaters of operations, these obstacles are almost identical to the ones Military Railway Service units are contending with daily on the battle fronts.

In addition to the Military Railway Service Headquarters No. 1 activated at Fort Snelling, there have been activated Military Railway Service No. 2, commanded by Brigadier General (then Colonel) Clarence L. Burpee (A. C. L.); and Military Railway Service No. 3, activated overseas, now under command of Brigadier General Paul F. Yount (regular Army).

No Job in U. S.—The purpose of the Military Railway Service is the operation and maintenance of railroads in theaters of war. The organization has no function within the continental limits of the United States other than the activation and training of military railway units. It has no responsibility or connection with the operation of commercial railroads in this country except insofar as its units are assigned to various railroads for technical training.

New construction, heavy repair, and restoration of railway right-of-way in theaters of war is the mission of the Corps of

Engineers. However, in actual practice, troops of the Military Railway Service have, in emergencies, handled all phases of construction and maintenance necessary to keep the military railways in operation.

Army Cuts Demurrage Payments

Only 12 per cent of the freight cars handled at Army depots, camps, ports of embarkation, holding and reconsignment points and other installations during the month of September were delayed in loading or unloading beyond the free time allowed, according to a War Department press release. This compared with 14 per cent on which demurrage charges had to be paid in both July and August, and amounted to a saving of 5,000 car-days, according to Army calculations.

During September 250,000 freight cars were loaded or unloaded at Army installations, it was disclosed. Of these, 160,000 cars were released within 24 hrs. and an additional 60,000 were released before the expiration of the usual 48 hours free time. Army-Navy consolidating stations and freight distributing agencies also set up a record in prompt release of cars during this month, it was explained, 83 per cent of the cars received at these points being released within 24 hrs. Only 2 per cent of cars received at consolidating stations were held more than 48 hrs., while the distributing agencies made a still better record, holding only one per cent of cars received beyond free time.

Dutch Railroaders Continue in Defiance of Nazis

Continuing to refuse the German offer of double wages and double food ration, Dutch railwaymen on November 10 went into their seventh week of strike, which originally had been ordered by the Netherlands government in London, and except for a few trains manned by German crews, traffic was halted in Holland.

The Netherlands Information Bureau in New York now reports that all German attempts to break the strike have failed, "despite widespread starvation and the spectre of epidemics, the shooting of railway officials, and Nazi retaliation against strikers' families."

Five days after the walk-out, the Germans executed 13 out of 16 railway officers arrested. Failure of this reprisal to start the supply and troop trains moving, caused the Nazis to threaten wives and children of strikers, at which point thousand of trainmen and their families "vanished underground."

In one three-day period, just three trains, manned by Germans, moved between Amsterdam and Rotterdam, where in 1939 over the same route and in the same period, 114 trains had been in operation.

Freight Should Be Accepted on Thanksgiving—Johnson

Stores and other business establishments planning to close Thanksgiving Day have been warned by Director Johnson of the Office of Defense Transportation to keep at work a staff sufficiently large to handle incoming freight, particularly l.c.l. shipments, since delays in unloading freight cars and trucks will tie up equipment needed during this period when transportation facilities should be utilized to the fullest possible extent.

"With war plants running full tilt on Thanksgiving Day and with the nation's freight-carrying equipment so badly needed to carry war freight and the products of our farms at this season," said Colonel Johnson, "the managers of plants closing on Thanksgiving Day or the Thanksgiving Day week-end will be aiding the war effort by making certain that all material consigned to their plants is unloaded without interruption or delay due to lack of workers to receive it."

No Year-end Time Off to Travel Is Johnson's Request

Private employers and government agencies have been asked by Col. J. Monroe Johnson, director of the Office of Defense Transportation, to refrain from granting employees time off or vacations, where intercity travel will be involved, during the period from December 15 to January 9, 1945. In addition, both government and private business travel should be cut down during this period to the extent that it can be deferred without impairing the war effort, the O. D. T. head said.

In writing to government agencies to enlist their support in this program to curtail civilian travel during the year-end holiday season, Colonel Johnson said the armed services will co-operate to lighten the travel load during this critical period by limiting the number of furloughs and leaves granted at all stations and camps. In addition to asking government agencies not to allow employees annual leave in the holiday season, and to curtail business travel, he reiterated the suggestion that all government agencies refuse all requests for government speakers at conventions or similar group meetings.

Colonel Johnson said he realized a considerable personal sacrifice is involved in giving up normal holiday reunions of families, but that such sacrifice is an essential part of civilian contribution to the war effort. Full co-operation of employers and employees, both government and private, will, he added, substantially assist those charged with the responsibility of meeting transportation obligations imposed by the war.

I. C. C. Service Orders

The Interstate Commerce Commission has directed railroads operating in Illinois and Wisconsin to forward by the most available routes traffic routed to, from, or via the Chicago, Aurora & Elgin and the Chicago North Shore & Milwaukee during the period these roads are unable to transport shipments because of the "work stoppage" effective on their lines. This direction was effective at 6 p. m. on November 10, being embodied in Service Order No. 253.

Revised Service Order No. 243, superseding No. 243 as originally effective October 16, permits one light-weighing of any tank car on a railroad-owned or industry track scale for the sole purpose of stenciling that light weight on the car, while the original order allowed such light weighing only when a "legible" tare weight was not stenciled on the car. The revised order becomes effective November 20.

Applications for Some Diesel Parts Require Form 541

Operators of transportation systems may no longer use the blanket authorization provided under P-142, the railroad maintenance and repair order, to purchase certain repair parts for Diesel-electric locomotives of 660 h.p. or larger, according to a November 14 announcement from the War Production Board. To obtain Diesel trucks, complete truck assemblies, propulsion motors, and generators for repair and reconstruction, operators must apply for a rating on Form WPB 541.

The change was made by Direction 6 to P-142, effective the 14th, and designed to "prevent the accumulation of critical Diesel-electric locomotives parts in operators' stocks" and to "assure more equitable distribution of these items."

Johnson Says Traffic Won't Be Much Less in 1945

Taking the position that this country today "cannot afford" to indulge in too extensive post-war planning, or to "worry about the new automobile, the chromium-plated miracle house, the washing machines and the plastic gadgets of a future still to be won," Col. J. Monroe Johnson, director of the Office of Defense Transportation, on November 14 told the War Conference of the National Association of Railroad and Utilities Commissioners at Omaha, Neb., that 1945 will not "offer any real relief or any sizable reduction in the burden American transportation, either freight or passenger, will be called upon to carry."

Those who, last summer, expected a quick finish to the war in Europe have been proved over-optimistic, the speaker pointed out. The result is, he said, that the present situation is not one where we are faced only with a shift in transportation, which would have been a consequence of accelerated activity in the Pacific accompanying a tapering off of activity in Europe. Instead of this problem, difficult enough in itself, the nation's transportation facilities are faced with two enormous jobs "superimposed one on the other—the burdens of two widely separated wars to move on a transportation system long over-burdened with the load of a single war."

The demand for transportation is "far greater" today than at any time during the war, Colonel Johnson observed. The War and Navy departments are calling for increased production of much war material. In October "there was far more tonnage shipped out of our eastern ports than any previous month since the war started. And the tonnage leaving our Pacific ports . . . is reaching awesome proportions."

One post-war "suggestion" is in order at this time, nevertheless, the O. D. T. director remarked. "We have learned that when the carriers, the shippers, the public, labor and government (local, state and federal) get together on the same team—learn the same set of signals and plays—that almost any desired goal can be attained. I think that is a pretty sound pattern to follow after the war."

News Department continued on next left-hand page

To meet war traffic demands

Akron, Canton & Youngstown

ADDS ANOTHER

LIMA 2-8-2



Serving busy war industry centers in northern Ohio, the A. C. & Y. requires steam motive power capable of moving heavy traffic at high speeds. For this purpose it is utilizing Lima 2-8-2's, and has just added another of these Super-Power Locomotives to its fleet.

LIMA LOCOMOTIVE WORKS — LIMA LOCOMOTIVE WORKS INCORPORATED — INCORPORATED, LIMA, OHIO

GENERAL NEWS

Federal Ownership Behind Trust Suit

So declares Transport Assn. in asking Congress to reexamine policy

The suit filed in September by the Department of Justice against the railroads is itself one thing, but the preliminary public build-up which preceded it clearly serves to characterize this prosecution as an integral part of a maneuver toward government ownership, according to the annual report of the Transportation Association approved at its annual meeting at Chicago on November 9. The report recommends that regulation be designed solely from two viewpoints: (1) to assure the shipper and consumer of the most dependable and efficient services, regardless of the type of the facility, at the lowest rates consistent with (2) affording a fair opportunity for the investor to earn a reasonable return upon private capital, prudently used; that national policy provide for the orderly and leisurely reorganization of common carriers so that the industry, as a whole, will become responsive to efficient regulation; that regulation and the promotion of all common carriers be centralized in a single federal agency; and that as a first step toward accomplishing such aims, Congress should undertake a complete reappraisal of national transportation policy in view of changing conditions of the past 25 years.

"Common Ownership."—The principle of "common ownership" of all types of transport facilities under appropriate regulation, the report states, has been endorsed by the American Bar Association, the United States Chamber of Commerce, the National Transportation Committee and the National Industrial Traffic League.

Directors elected to serve for the term expiring November, 1947 are: John W. Barriger III, manager, Diesel Locomotive division, Fairbanks Morse & Co., Chicago; Paul W. Brown, general traffic manager, Sears, Roebuck & Co., Chicago; W. J. Hammond, vice-president, Inland Steel Company, Chicago; Guy E. Reed, vice-president, Harris Trust & Savings Bank, Chicago; R. C. Ingersoll, president, Ingersoll Steel & Disc division, Borg-Warner & Co., Chicago; and Philip C. Cooney, vice-president, Insurance Company of North America, Philadelphia. At the annual meeting of the board, J. L. Madden, vice-president, Metropolitan Life Insurance Company, New York, was elected chairman of the board of directors and of the executive committee.

Officers elected by the board of directors are: President, Sydney Anderson, vice-president, General Mills, Inc., Minneapolis, Minn.; executive vice-president, Donald D. Conn; treasurer, John W. Barriger III, manager, Diesel Locomotive division, Fairbanks Morse & Co., Chicago; and secretary and assistant treasurer, E. C. Krogh.

Pre-Suit Addresses Give Pattern.—"The content of the addresses made by the vice-president, the attorney general and the assistant attorney general preceding the filing of the suit against the railroads," the report continues, "give the pattern of the maneuver. The anti-trust laws are being used to disintegrate the transportation industry and make private ownership unworkable.

"This action is presented to the people in the western and southern districts of this country as a move to chastise the railroads for practices of so-called 'monopoly,' which have existed, apparently, for 25 years without the Department of Justice having suspected it. The suit, if successful, would upset regulatory practices and procedures which have been in effect for many years not only under the direct control of the Interstate Commerce Commission, but many of them set up on a formula laid down by the Commission itself.

"The disintegration of our systems of transportation, which would take place if this suit succeeds, would grind down to the vanishing point the value of private capital invested in the properties under attack. . . . The real defendants in this suit are not the railroads themselves but the shippers and consumers of transportation services."

N. Y. R. R. Club Dinner

The annual dinner of the New York Railroad Club will be held at the Hotel Commodore, New York, at 7 p. m., December 7. The occasion is designated as a "Transportation Rally Dinner," the purpose of which is to afford people from the railroad and allied industries in the immediate New York area an opportunity for contacts not possible during their daytime duties. The price is $6.50 per person and reservations are being handled by C. C. Fletcher, chairman of the seating committee, New York Railroad Club, 466 Lexington Avenue, New York 17, N. Y.

I. C. Names Trains "Irvin S. Cobb"

The Illinois Central has named train No. 103, operating overnight between Louisville, Ky., and Memphis, Tenn., and train No. 104 returning, the "Irvin S. Cobb" in honor of the late humorist.

I.C.C. Gives Carrier Status to Allied Vans

Grants certificates for nationwide service as mover of household goods

Reporting on the long-pending applications of Allied Vans, Inc., the Interstate Commerce Commission, Division 5, has found that a certificate should be issued authorizing continuance of operations by Allied as a common carrier by motor vehicle of household goods over irregular routes between all points in the United States. The report in No. MC-15735 represents the view of Commissioners Lee and Rogers; while Chairman Patterson in a dissenting expression protested against the denial of oral argument in the proceeding, saying that he had not considered "the merits of the case," and that he was unwilling to do so "until the parties are afforded full opportunity to orally argue the issues."

Examiners Failed to Agree—The effect of the majority report is to give Allied the nationwide rights recommended in the second proposed report in the proceeding—that of Examiner W. T. Croft (see *Railway Age* of June 24, page 1220) whose proposed findings were directly contrary to those of the first proposed report by Examiner B. Freidson (see *Railway Age* of October 12, 1940, page 522). Mr. Freidson had recommended denial of carrier status to Allied after finding that its undertaking to coordinate the operations of local haulers into a long-distance service for moving household goods made it "merely a service facility" of the National Furniture Warehousemen's Association.

Allied was originally created and had been maintained by members of the Association, but divorce proceedings had been decided upon by the time Examiner Croft's report came along. The proposed divestment plan is now before the commission for approval, as noted in the *Railway Age* of September 9, page 417. Meanwhile, as noted in the issue of October 9, 1943, page 578, the commission has rejected an Allied proposal for the pooling of traffic and earnings of its affiliates, which was made as an alternative to the applications for certificates involved in the present proceedings.

The applications for the certificates were filed in 1936, and the commission's failure to decide the case more promptly was the basis of the objection raised by E. Adamson, counsel for one of the protestants, to confirmation by the Senate of President Roosevelt's reappointment of Commissioner

(*Continued on page 796*)

News Department continued on next left-hand page

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Transport Assn. Is Asking for Advice

Thinks Congress should name joint body to set policy in national interest

The Transportation Association of America has addressed a circular to its members, to various civic organizations, and to members of Congress, in which it invites them to express themselves on three questions, viz: (1) whether common carriers should be treated under the law as competitive enterprise or as regulated monopoly; (2) whether or not regulated common carriers should be excluded from the application of the anti-trust laws; and (3) whether or not regulation of all common carriers should be centralized in one federal agency.

Must Quit Playing Favorites—In submitting these questions, the Association's circular reviews some of the main points of its position regarding transportation, and asserts its willingness to amend its views to the extent that proposals are advanced which will "meet the issues involved in the domestic common-carrier problem" more adequately than its own. It is again explained that the Association represents the national interest, and not that of any one type of transportation; and that "no lasting solution of the common-carrier transportation problem is possible unless and until we base our philosophy on the national requirements of the industry." "Congress," the Association says, "cannot long continue the practice of promoting one form of transport against another."

In reviewing its program, the Association explains that it is opposed to the imposition of artificial controls over any kind of private transportation; the solution of the common carrier problem must not be sought in the imposition of "uneconomic burdens" on private transportation.

The Association favors the retention of competition in transportation, but would not "restrict the source of capital" of any agency; that is, "common ownership" of more than one type of transportation by a single company should be permitted. Over a reasonable period of time, the formation of "a limited number of competitive transportation systems," each offering service by all types of agencies, should be encouraged—but the Association would not enforce consolidations to achieve these "limited number of systems."

Transport Should Be Viewed as a Whole—At present, says the Association, Congress "keeps each type of transportation in a separate legislative straight-jacket, playing one against the other, on the fallacious theory that the way to keep rates down is to compel competition between facilities," without encouraging each agency, instead, to concentrate on the type of service to which it is economically best fitted. Congress compels "private capital invested in railroad roadbeds, which must earn a return, to compete with government capital invested in the public domain, which need earn no return." The legislators "mix the Sherman Anti-Trust Act with the Interstate Commerce Act," the two being incompatible. To top off the picture, the regulation of common carriers is divided among government agencies, "the policies of one being wholly unrelated to those of others."

The Association does not, it explains, favor the consolidation of all railroads into a single system, nor, as said before, does it advocate compulsory consolidation. It does not favor the proposal of the National Resources Planning Board that the government own the railroads' roadways. Rather, it believes its limited number of "competitive transportation companies" would preserve the favorable features, both of competition and of regulated monopoly.

"The first step looking to a solution of the basic issues of this problem rests with Congress," the Association concludes. It suggests that a joint committee of the House and Senate be created, composed of senators and representatives selected from the standing committees now dealing with different phases of transportation, "to reappraise national policy in the light of the changed conditions of the past 25 years."

Lackawanna Head Named to N. Y. Chamber of Commerce

William White, president of the Delaware, Lackawanna & Western, has been elected a vice-president of the Chamber of Commerce of the State of New York. He will serve until May, 1946, and will succeed the late Frederick E. Williamson, who was president of the New York Central.

Rinehart Named Assistant Director, Safety Bureau

E. D. Rinehart, chief of the Accident Investigation Section, Bureau of Safety, Interstate Commerce Commission, has been appointed assistant director of the bureau, succeeding the late Sydney R. White. Mr. Rinehart has been associated with the bureau for 19 years, and he was previously in railroad service in various capacities from telegraph operator to assistant train master.

Seek Private Operation of Mexican Railways

Mexican business men have offered to lend their government $200,000,000 or more for the post-war rehabilitation of the National Railways of Mexico on condition that the government turn operation of the roads over to private business, Alejandro Noye, chairman of the Confederation of the National Chambers of Commerce of Mexico and a Mexican delegate to the International Business Conference, stated at Rye, N. Y., on November 13. The first draft of the plan to revitalize the railroads was drawn last summer. Since then President Avila Camacho has endorsed the plan but labor unions have opposed it.

Under the businessmen's plan the government would be called upon to form a railroad company that would not be under the influence of the government. It would be operated by an eight-man board of directors, of which five men would be appointed by business men, two by labor, and one by the government.

Proposes Plan to Revamp C. of Ga.

Examiner would go along with trustee generally except on capitalization

Central of Georgia capitalization would be reduced from $86,170,919 to $68,182,343 and annual fixed charges would be cut from some $3,000,000 to $639,000 under a plan of reorganization recommended for Interstate Commerce Commission approval in a proposed report by Examiner J. V. Walsh. The proposed report points out that, except for the further reduction in capitalization, the plan recommended by the examiner is much the same as the amended plan submitted by Trustee M. P. Callaway, as modified at hearings and on brief.

The trustee's plan was outlined in the *Railway Age* of February 5, page 334. It proposed a capitalization of about $84,408,798, relating that figure to an old-company capitalization of more than $112,000,000. The latter, however, included $27,582,459 in unpaid interest, an item which the examiner notes but does not include in the capitalization when he arrives at the old-company figure of $86,170,919 noted above.

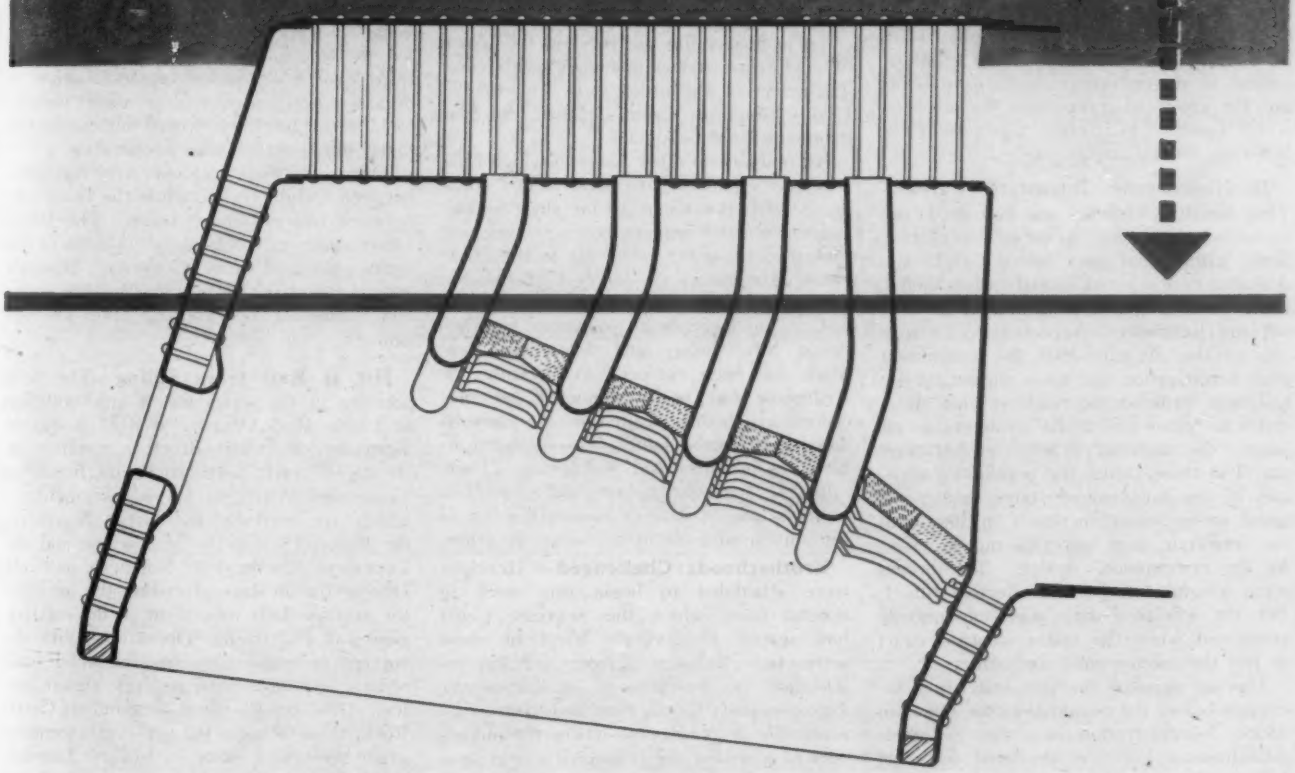
Cutting Proposed Capitalization—In reducing the latter to his recommended figure of $68,182,343, Mr. Walsh cuts the proposed 5 per cent preferred stock of the reorganized company to $16,000,000 as compared with $22,229,503 suggested in the trustee's plan; and the proposed common stock to $18,000,000 as compared with $29,000,000. The examiner recommends no change in those phases of the trustee's plan which would find that unsecured creditors should receive nothing for their claims, and wipe out the old company's common stock, owned by the Illinois Central. However, a secured Illinois Central claim for $1,108,347 would be settled for $383 in cash, $2,697 in first mortgage bonds, $4,364 in income bonds, $7,436 in preferred stock, and $60,285 in common stock.

In addition to the $16,000,000 of preferred stock and $18,000,000 of common, the capitalization recommended by the examiner would include $3,179,295 of equipment trust obligations, carried over undistributed from the old company; $14,000,000 of 4 per cent fixed-interest debt; and $16,000,000 of 4½ per cent income bonds. "The requirements of such a capitalization, including interest, sinking funds, retirement fund, preferred stock dividend, and a $3 dividend on the common stock would be $3,169,570," the proposed report says. "Including a $6 dividend on the common stock, requirements would be $3,979,570. The old company, with no preferred stock, had total charges of $3,364,022 before common dividends.

Would Retain Boat Line—As does the trustee's plan, the plan recommended by the examiner makes provision for retention of the Ocean Steamship Company, and for consolidation, merger or purchase of transportation properties of lessors in lieu

(*Continued on page 796*)

Water Dropped 16⅞ Inches Below Crown Sheet!



Recently on a midwestern railroad, the water level in a Mikado type locomotive receded sixteen and seven-eighths inches below the crown sheet.

The locomotive, however, was equipped with four SECURITY CIRCULATORS, which produced a positive flow of water over the center of the crown sheet. This protected the crown sheet despite the low water, and instead of a serious boiler accident the only damage was the pulling of a few radial crown bolts.

With SECURITY CIRCULATORS suitably spaced from flue sheet to door sheet, an ample and positive flow of water over the entire crown sheet is thus assured in the event of a receding water level.

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SECURITY CIRCULATOR DIVISION

Intrastate Fares Reach High Court

I.C.C.'s authority to overrule states contested—Other Supreme Court cases

The validity of an Interstate Commerce Commission order requiring interstate railroads to increase their intrastate passenger fares to the level of interstate fares, as established by the commission in its Ex Parte 148 proceedings, will be passed on by the Supreme Court of the United States as the result of its November 13 grant of review of district court decisions upholding the commission in cases docketed as *North Carolina* vs. *United States* and *Alabama* vs. *United States*.

Discriminatory Intrastate Fares—The North Carolina case involved the commission's order affecting intrastate fares within that state alone, while the Alabama case covered similar orders applying to intrastate fares in Alabama, Tennessee and Kentucky. As noted in *Railway Age* of May 20, page 1001, the commission after investigation and upon request by the railroads, ordered the roads serving those states to "cease and desist" from collecting lower "discriminatory" fares on intrastate travel in those states, the regulatory agencies of the four named states having refused to authorize increases in line with the interstate fare increases put in effect by the commission's order. The orders were scheduled to become effective July 1, but the effective date was subsequently postponed when the states went to court to test the commission's authority.

Having opposed the intrastate fare increases before the commission, the Office of Price Administration and the Economic Stabilization Director appeared in court in opposition to the I. C. C. and in support of the state agencies, and companion suits in the name of Stabilization Director Vinson will be reviewed by the Supreme Court at the same time, the United States (that is, the I. C. C.) being the defendant.

Through a *per curiam* ruling in the case of the *New York Public Service Commission* vs. *United States* the Supreme Court on November 13 upheld the lower court and the I. C. C. on the Yonkers branch abandonment by the New York Central about which extensive litigation developed. As reported in *Railway Age* of January 8, page 171, the Supreme Court set aside an order of the commission authorizing the abandonment of the line in question upon the ground that the commission had failed to make the requisite findings establishing its jurisdiction with respect to a line located wholly within one state, used wholly for passenger service, and not conclusively shown to be operated in interstate commerce.

The commission reopened the proceeding and issued a report on reconsideration, as noted in the issue of March 4, page 476, setting forth its conclusion that it had authority to act in this case, indicating how continued operation of the branch at a loss would be a burden on interstate commerce, and again authorizing the New York Central to abandon the line. The Supreme Court, to which that order was brought on appeal, affirmed the judgment of the lower court and ruled the findings were sufficient to support the order and the evidence was sufficient to support the findings.

Liability Cases—Another *per curiam* order of the Supreme Court, handed down on November 13, disposed of the case of the *Denver & Rio Grande Western* vs. *Bruner*. Here the court held "insubstantial or not properly raised" the road's contention that the trial court, in dealing with an employer's liability suit, had failed to instruct or had erred in instructing the jury on the issues of negligence and contributory negligence. The effect of the order is to support the Utah Supreme Court's affirmation of judgment for the claimant.

No opinions in other cases to which railroads were parties have been handed down by the Supreme Court so far since it convened after the summer recess. Time for filing a petition for rehearing in the *Hudson & Manhattan* vs. *Jersey City* case, in which the road has been authorized by the I. C. C. to increase its passenger fare between New Jersey and downtown New York, has been extended to December 9. Argument has been completed and decisions are being awaited in the consolidated employer's liability cases known as *Herb* vs. *Pitcairn* and *Belcher* vs. *Louisville & Nashville*, where the immediate issue is one of date of commencement of the suit, arising from a change of venue.

Brotherhoods Challenged—Hearings were scheduled to begin this week in several cases which the Supreme Court has agreed to review. First of these were two Railway Labor Act cases—*Tunstall* vs. *Brotherhood of Locomotive Firemen and Enginemen* and *Steele* vs. *Louisville & Nashville*—where the union's duty to represent negro firemen was at issue in connection with claims of race discrimination based on seniority. The scope of a union's authority and the conclusiveness of an adjustment board decision were at issue in *Elgin, Joliet & Eastern* vs. *Burley*, while a union jurisdictional dispute was the basis of *Order of Railway Conductors* vs. *Pennsylvania Railroad*.

In addition to hearing later several employer's liability cases and the intrastate fare increase cases referred to above, the Supreme Court also has set the original case of the state of Georgia against 20 railroads, alleging freight rate discrimination, for hearing January 2, 1945, so far as its legal aspects are concerned. Another case expected to come up early next year is that of the *Pennsylvania* vs. *United States*, the issue being application of per diem charges on cars interchanged with water carriers.

Two other cases to which considerable interest attaches have been docketed for review by the Supreme Court. One (*Southern Pacific* vs. *Arizona*) concerns the constitutionality of the Arizona train limit law. The other (*Pennsylvania Railroad* vs. *United States*) grew out of an I. C. C. order which in effect, it was claimed, required the road to short-haul its own lines by participating in joint routes.

Road Is Blamed in Dewey Train Crash

I. C. C. finds safety provisions were "inadequate" in three successive accidents

As a result of its investigations of three accidents on the Northern Pacific in the state of Washington which occurred within a 48-hr. period, the Interstate Commerce Commission has recommended that "adequate" block systems be established to prevent the development of the situations that led to two of the collisions, while in the third case it called for the installation of derails co-ordinated with electric switch-locking in territory where an automatic block signal system was in operation.

Two of the three accidents were collisions between freight trains, while the third was between two passenger trains. The latter received unusual publicity because one of the trains involved was Governor Dewey's special campaign train, carrying his party and a number of reporters and photographers.

Hit at Exit from Siding—The first accident in the series was a side collision at Castle Rock, Wash., at 8:53 p. m. on September 18. Castle Rock is a station on the double-track Northern Pacific line from Vancouver, Wash., to Tacoma, segments of which are used by the Great Northern, the Union Pacific, the Milwaukee and the Longview, Portland & Northern as well. During the 30 days preceding the accident the average daily movement on the subdivision was 49.7 trains. Operations with the current of traffic were by timetable, train orders, and an automatic block signal system. The tracks were tangent at Castle Rock, there being a 0.2 per cent ascending grade westward (that is, toward Tacoma, this being the timetable designation for such movements).

No train order had been issued restricting the authority of either of the two westbound freight trains involved in this collision. The leading train, N. P. Extra 1553, consisting of two engines, 67 cars, and caboose, had begun to move from the siding at Castle Rock into the westbound track when the approach of the following train on that track was noticed. The leading train was pracically stopped, with its engines fouling the main track, when the second engine was struck by Great Northern Extra 2185 West, moving about 40 m. p. h. The G. N. train consisted of an engine, 27 cars and caboose. The engines of both trains and the first 6 cars of the G. N. train were derailed. One employee was killed and 4 injured, all being attached to the G. N. train.

The rules governing operations in this territory required that trains moving from a siding to the main track remain clear of the insulated joints at the clearance point for at least two min. after the switch was opened. They also required that a movement from a siding into the main track must not be started until flag protection has been provided. Flag protection was not provided for the N. P. train in this case, according

News Department continued on next left-hand page

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to the commission's report, which was prepared under the supervision of Chairman Patterson. While the conductor of the N. P. freight thought he lined the switch for movement from the siding at least 5 min. before the collision, the report pointed out that the G. N. train, which was moving about 40 m. p. h. until the brakes were applied in emergency just before the accident occurred, would have required about 1 min. 30 sec. to travel the 5,657 ft. to that point from the last automatic signal, which displayed clear when the G. N. train passed it.

Derails Needed—In the two years preceding this accident, the report pointed out, the commission has investigated 6 accidents, 5 in automatic block signal territory, in which 43 persons were killed and 197 injured, where a train fouled the main track immediately in front of an approaching train without having provided flag protection. "In view of the nature and volume of traffic on this line," it concluded, "all facilities which are reasonably required for adequate protection should be provided. Derails located at the clearance points and arranged to operate in conjunction with electrically locked switches would prevent trains about to enter a main track from fouling the main track immediately in front of an approaching train." Such an arrangement, it went on to say, would have prevented this accident

As a result of the collision just described, the eastbound track in the vicinity of Castle Rock was out of service for some time, and trains moving in either direction were being operated over the westbound track, over a distance of about 18 miles, under authority of a train order calling for single track operation.

There was no block system in use for movements against the current of traffic, and under the rules applicable to single-track operations, the only provisions for spacing eastbound trains were by the time-interval method enforced by operators at open stations and by fusees. A 10-min. interval between trains was established under this arrangement.

Accident to Dewey Train—An eastbound G. N. passenger train, Extra 3213, consisting of a locomotive and 22 cars, the last one a business car, was stopped by a flagman about 11:38 a. m. on September 19 at a point nearly 1 mile west of Castle Rock on the same N. P. line. It soon proceeded eastward about 1,800 feet and again stopped, with its read end standing about 0.64 mile west of Castle Rock. The track was tangent at that point, but a short distance to the rear was a 1,431-ft. compound curve with 2-deg. maximum curvature to the right (for eastbound trains).

About 11:45 a. m. the rear of the standing train was struck by eastbound G. N. Passenger Extra 2501, the 13-car Dewey compaign train, which was moving about 25 m. p. h., its speed having been reduced by an emergency brake application from the estimated 45 m. p. h. speed at which it was moving some 2,200 ft. to the rear when the engineer sighted the preceding train. The authorized speed for Extra 2501 was 65 m. p. h., and it was moving at about 60 m. p. h. until speed was reduced about a mile west of Castle Rock preparatory to compliance with a slow order effective at the point of the first collision.

One passenger was killed and 41 passengers and 17 employees were injured in the second accident. Four cars of Extra 3213 were considerably damaged, while the engine and first car of Extra 2501 were derailed and considerably damaged, stopping upright in line with the track. The thirteenth car of the Dewey train also was slightly damaged.

Fusees of 5-Min. Type—Extra 2501 had departed from the last open office to the west 10 min. after the preceding train, as required by rule, and the enginemen had seen no warning signals until a lighted fusee and the red flag of the preceding train's flagman were observed at a point about 500 ft. to the rear of that train, after the engineer of the following train already had made the emergency brake application. The flagman of Extra 3213, stationed on the car next the rear of that train because a business car was at the rear, had dropped lighted 5-min. fusees at several points along the route, the last at a point 3,600 ft. west of the place where his train first stopped. When his train stopped at the point where the accident occurred he started to the rear, and had proceeded about 500 ft. when he observed the following train approaching.

Under the rules, the commission's report pointed out, the flagman of the preceding train was required to provide flag protection when the speed of his train was first reduced as it approached the point where it first stopped, and also during the time it was moving the 1,800 ft. to the second stop as well as when it actually was stopped. "Although the rules applicable to this case required that a 10-min. interval be maintained between these trains, the flagman of the preceding train was furnished only 5-min. fusees," the report said, "and the fusees he dropped prior to the time his train stopped had burned out before the following train passed."

Blocking Urged in Such Cases—Even though the westbound track was being operated as single track, the report concluded, "the operation of the trains involved simulated movement against the current of traffic." The road's rules include rules for manual block operation, under which a following passenger train may not be permitted to enter an occupied block, except in emergency, but the manual block system was not in use for movement against the current of traffic in this territory. If the following passenger train had not been permitted to enter an occupied block, it observed, "this accident would not have occurred." Recommending that the road provide "an adequate block system for operation against the current of traffic," the report attributed the accident to "failure of the Northern Pacific to provide adequate safeguards for the movement of trains against the current of traffic."

The third accident in the series was a head-end collision between two extra freight trains near Little Rock, Wash., at 2:25 p. m. the next day, September 20. Two employees were killed and seven injured. This accident was at a point 10.14 miles west of Olympia, according to timetable designation, on the single-track line from that point to Hoquiam. Trains were operated by timetable and train orders. The average daily movement was 4.6 trains in the 30-day period preceding the accident, and the authorized maximum speed for the trains involved was 35 m. p. h.

Lap Orders—Westbound Extra 1903, made up of an engine, 60 cars and caboose, was moving about 30 m. p. h. entering a 2-deg. 10 min.-curve when it collided with eastbound Extra 1802, consisting of an engine, 2 cars and caboose, also moving about 30 m. p. h. Visibility was restricted by curvature and vegetation to about 400 ft., even though the weather was clear, so the collision could not be averted when the opposing trains were sighted, though action was then taken to stop them.

These trains were operating under overlapping train orders which gave each train authority to proceed past the point of the accident. "No provision was made to establish a meeting point or otherwise to protect the movement of these two opposing extra trains," the commission's report observed, "and the crew of each train had no knowledge of the existence of the other train." While this condition was the result of the train dispatcher's oversight, which he was unable to account for, his work having been of normal volume, the report pointed out that the road's manual block rules providing for blocking of opposing movements were not in effect in the territory involved. "If an adequate block system had been in use in this territory," it concluded, "these opposing trains would not have been permitted to occupy the same block simultaneously, and this accident would not have occurred." Establishment of an "adequate" block system was recommended.

Stevens Heads Bureau of Transport Economics

Dr. W. H. S. Stevens, assistant director of the Bureau of Transport Economics and Statistics, Interstate Commerce Commission, has been appointed director of the bureau, succeeding Dr. Max O. Lorenz, whose retirement as of October 31 was noted in last week's issue.

New York Ditch Has Barge Surplus, But Less Traffic

The present fleet of barges available for use on the New York State Barge Canal, together with some new private construction now under way, "should assure an adequate barge supply for all foreseeable needs," according to Lawrence C. Turner, Office of Defense Transportation assistant director in charge of the Waterways Transport Department, who thus disposed of certain published statements that additional dry cargo barges had been needed on the canal during the season now ending.

Not only has there been no need for additional barges, Mr. Turner pointed out, but many dry cargo barges that ordinarily operate on the canal have this year been put to good use in New York Harbor and on Long Island Sound. "There would be little prospect of obtaining any additional dry

News Department continued on second left-hand page



Who's Right?

THESE three men run three different kinds of locomotives—steam, Diesel and electric.

You don't have to be a railroad man to guess what they're arguing about.

It's all in fun, however. For deep down inside, each of these men—and every man who really knows railroading—realizes that no one type of locomotive is better than the other two except under certain conditions and for certain specific duties.

That's why American Locomotive builds all three. We've been in the business too long to champion one type of locomotive.

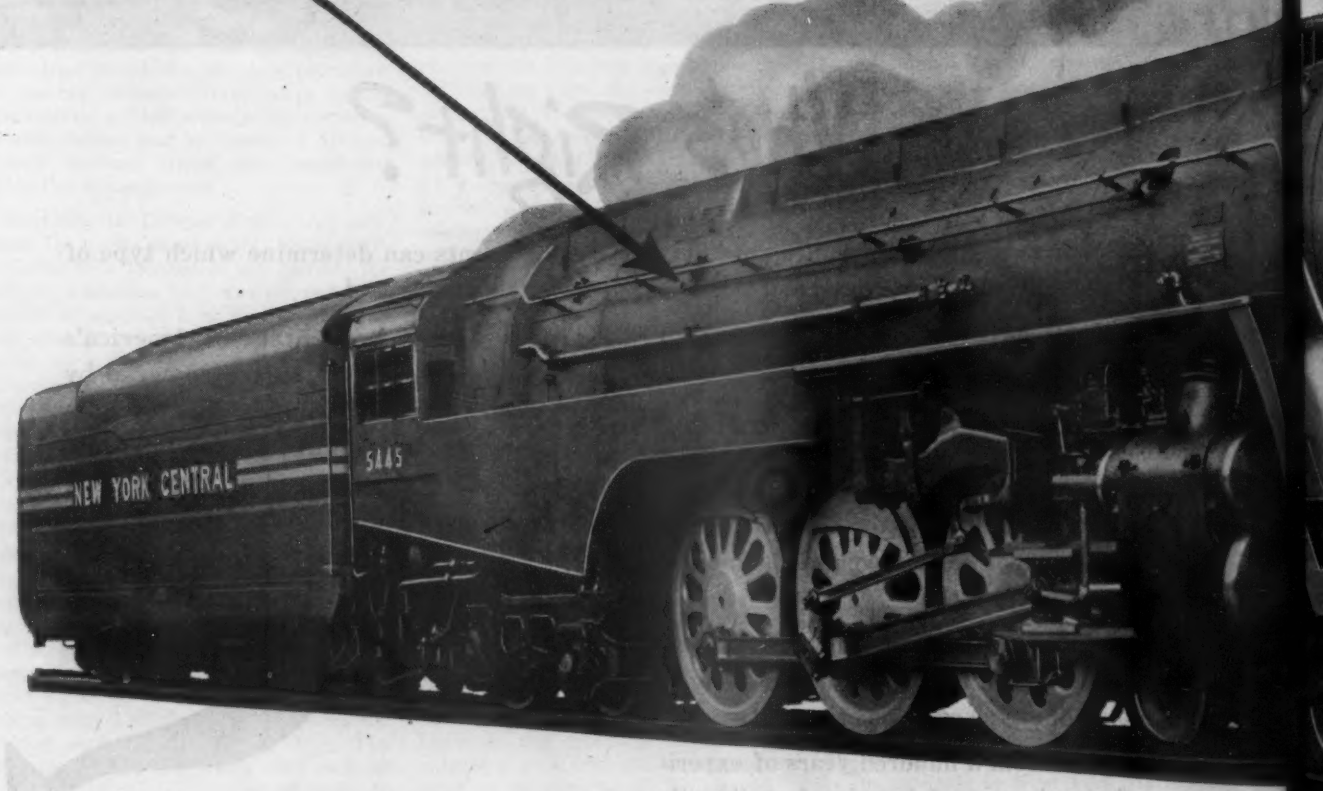
We know from a hundred years of experience that only a careful study of a railroad's requirements can determine which type of power should be used.

Today, a large percentage of America's crack streamlined trains are powered by American Locomotive engines. Three such famous engines are pictured on the following pages. Each is unsurpassed at its particular job because each was built for the job.

FOR THE ROCK ISLAND, American Locomotive and General Electric built four 2,000 h.p. Diesel-electrics—locomotives now pulling such famous trains as the "Choctaw Rocket" from Memphis to Amarillo and the "Golden State Limited" from Chicago to Kansas City.



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FOR THE NEW HAVEN, American Locomotive and General Electric built 30 dual-purpose 2,000 h.p. Diesel-electrics like this one. Working in pairs as a 4,000 h.p. unit, these Alco-GE engines make four trips daily between Boston and New Haven—powering two passenger trains by day and two freight trains by night.

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FOR THE NEW YORK CENTRAL, American Locomotive built the powerful, streamlined Hudson-type steam locomotives that pull the famous 20th-Century. Operating between New York and Chicago, these locomotives have helped these trains set new standards in speed, comfort and convenience.

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NEW YORK

cargo barge equipment through federal aid," he said.

Because of reduced traffic offerings during the war period, 1944 tonnage on the canal—exclusive of petroleum and petroleum products moved in steel tank barges—will fall substantially below the 1940 figure, taken as representing the last peacetime year, the O. D. T. statement disclosed. The estimate for 1944 to the close of navigation November 25 is 1,247,207 net tons, as compared to 2,666,180 tons carried in 1940.

North Shore and Aurora Railroads Tied Up by Strike

All freight and passenger service on the Chicago North Shore & Milwaukee and on the Chicago, Aurora & Elgin, two electric railways operating between Chicago and Milwaukee, Wis., and Chicago and Elgin, Ill., respectively, was tied up completely when the Brotherhood of Railroad Trainmen and the Brotherhood of Locomotive Firemen & Enginemen called a strike, on November 10, in protest against an increase of five cents an hour recommended by an emergency board. Up to November 14, no action had been taken by the President.

In September, the members of these unions threatened to strike on September 20 because the companies refused to meet their demands for an increase of 9 cents an hour, but the walkout was called off when the President on September 19 appointed an emergency board to consider the dispute. This board recommended an increase of 5 cents an hour on October 9 but the employees called a strike in protest on November 10.

Where C. N. J. "Real Tax Trouble" Lies

R. E. Thompson, property manager of the Jersey Central Lines, this week stated that "inordinately heavy New Jersey taxes make it difficult if not impossible to make worthwhile improvements at the many places along our lines."

Speaking before the Asbury Park (N. J.) Lions Club, the Jersey Central officer asserted "too much of our money is being syphoned into Hudson county [the political domain of Democratic boss, Frank Hague]. Until something is done to break the stranglehold which Hudson county has on railroad funds, the remainder of the state must suffer."

Mr. Thompson declared that as a company there was "very little to show" for its wartime performance. He said, "the stockholders didn't get a dime, the bondholders didn't get a dime. But we paid the state over 15 million dollars in taxes. Our 1943 gross revenues were almost $63,000,000—an all-time record—but after paying all of our expenses and our New Jersey taxes of around $5,500,000, we had only $700,000 left as net profit."

He said the Jersey Central's "real trouble, as far as property taxes are concerned, is in the comparatively few miles our railroad operates in Hudson county, which all of you will recognize as being the kingdom of Jersey City."

He explained: "The total assessed valuation of all our land and structures is $68 millions, and of this, $33½ millions is in Jersey City, and if you include the remainder of Hudson county, the assessment is $40,600,000, or well over half of our New Jersey assessment. That's where the bulk of our tax money goes. If we are short of funds for worthwhile improvements, Jersey City has the money."

October Employment 3.11 Per Cent Above October, 1943

Railroad employment decreased 1.27 per cent—from 1,427,833 to 1,409,663—during the one-month period from mid-September to mid-October, but the October total was 3.11 per cent above October, 1943, according to the latest summary prepared by the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission. The index number, based on the 1935-1939 average and adjusted for seasonal variation, was down in October to 133.7 as compared with September's 136.6. The October, 1943, index was 129.6.

October employment was below that of September in all groups, save executives, officials, and staff assistants, which was up 0.36 per cent. The decreases in the other groups ranged from 0.09 per cent for transportation (other than train, engine and yard) to 4.08 per cent for maintenance of way and structures. All groups except train and engine service (down 0.21 per cent) were above October, 1943, the range of increases being from 2.63 per cent for transportation (other than train, engine and yard) to 7.55 per cent for maintenance of way and structures.

Vacation Parleys Delayed

Negotiations between the carriers' conference committees and the non-operating unions for longer vacations with pay have been postponed from November 15 to December 7.

Zephyr Service Commemorated

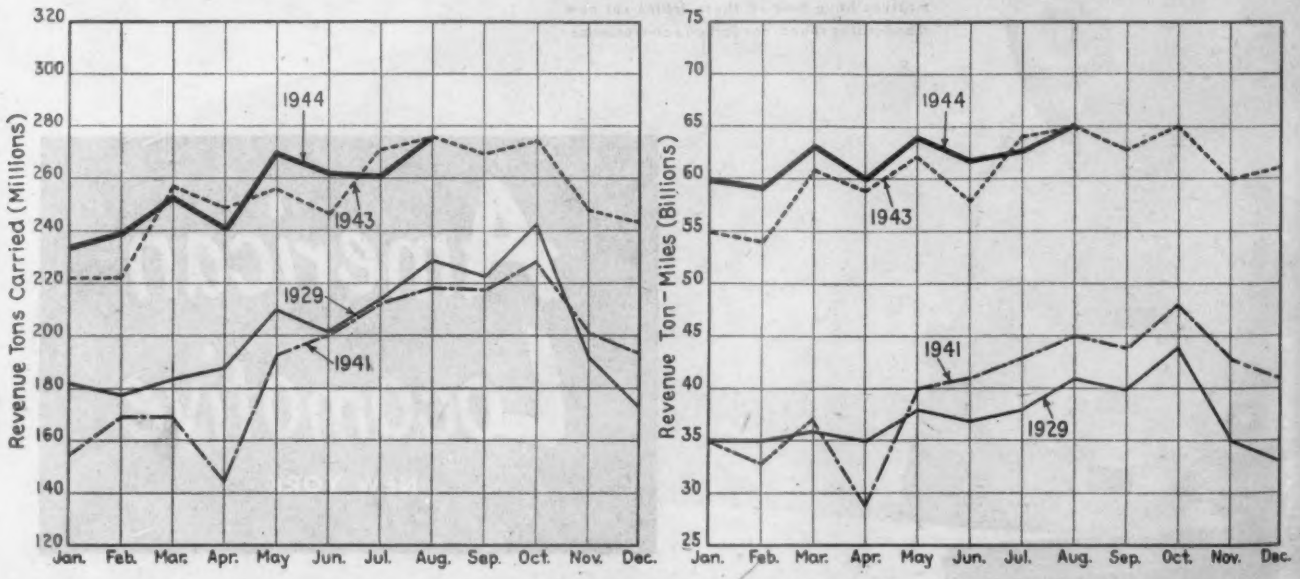
The tenth anniversary of the first streamline train service in America, inaugurated November 11, 1934 by the Chicago, Burlington & Quincy's "Pioneer Zephyr," was commemorated this week when three cities on the original Zephyr route honored the three men who conceived and built the train. The cities were Kansas City, St. Joseph and Omaha. The men were Ralph Budd, president of the Burlington; Edward G. Budd, president of the Edward G. Budd Manufacturing Company, builder of the train, and H. L. Hamilton, vice president of General Motors Corp., which built the Zephyr's Diesel power plant.

Kansas City commemorated the event at noon on November 15, with a chamber of commerce luncheon; St. Joseph with a chamber of commerce dinner on the evening of November 15, and Omaha with a chamber of commerce luncheon on November 16.

Freight Car Loading

The total of carloadings for the week ended November 11 was not available at the time this issue of *Railway Age* went to press.

Loading of revenue freight for the week ended November 4 totaled 893,333 cars, and



Revenue Tons and Revenue Ton-Miles—1944 Compared with 1929, 1941 and 1943

News Department continued on third right-hand page

They'll Set The Pace!



GENERAL MOTORS

Passenger

LOCOMOTIVES

We Resume the March

★ Post-war America demands a fine new conception of railroad schedules, comfort and reliability.

★ Pre-war performance demonstrated that General Motors Diesel locomotives had opened a new vista of passenger train performance.

GENERAL MOTORS
LOCOMOTIVES

· · · of Passenger Progress

★ War-time performance has further demonstrated the ability of these locomotives to take unprecedented punishment on fast, heavy runs and ask for more.

★ Full development of the possibilities in this new transportation tool stands as one of the brightest promises of the post-war period.

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS CORPORATION
LA GRANGE, ILLINOIS, U. S. A.

Make the Pace and KEEP IT!

Ownership of the world's most capable motive power will not be enough in the stepped-up pace of American life of the next decade. Along with ability to perform on both freight and passenger schedules thought impossible a decade ago American railroads will require a new standard of average utilization of all motive power to meet the public's idea of what it will have. Clock-like regularity will be one of the essentials of passenger service and one which Diesel locomotives, properly maintained, give above all other modes of transportation.

Foreseeing this, from the start, Electro-Motive has moved to aid its customers to meet the new standard of availability with its practical assistance in installation of progressive maintenance methods and facilities and in its nation-wide network of parts depots and service districts. Plans for widening and strengthening this service are commensurate with the sure indications of the rapidly increasing adoption of General Motors motive power.

GENERAL MOTORS LOCOMOTIVES

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS CORPORATION
LA GRANGE, ILLINOIS, U. S. A.

the summary for that week, as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading

For the Week Ended Saturday, November 4

District	1944	1943	1942
Eastern	164,432	143,543	149,783
Allegheny	189,321	150,737	173,357
Pocahontas	55,425	18,773	53,139
Southern	128,630	103,740	121,164
Northwestern	131,594	134,357	125,104
Central Western	145,061	129,975	134,372
Southwestern	78,870	73,614	72,744
Total Western Districts	355,525	337,946	332,220
Total All Roads	893,333	754,739	829,663
Commodities			
Grain and grain products	54,644	56,428	42,006
Live stock	25,295	26,333	20,765
Coal	170,963	42,803	163,193
Coke	14,337	11,820	14,270
Forest products	44,100	43,772	42,398
Ore	63,250	72,653	67,208
Merchandise l.c.l.	108,918	104,621	91,524
Miscellaneous	411,826	396,309	388,299
November 4	893,333	754,739	829,663
October 28	916,446	883,727	890,560
October 21	905,941	905,419	903,262
October 14	898,650	912,348	901,251
October 7	877,942	906,357	909,250
Cumulative Total, 45 Weeks	37,913,245	36,781,628	37,581,096

In Canada.—Carloadings for the week ended November 4 totaled 73,267, as compared with 78,535 for the previous week and 72,032 for the corresponding period last year, according to the compilation of the Dominion Bureau of Statistics.

Total for Canada	Total Cars Loaded	Total Cars Rec'd from Connections
Nov. 4, 1944	73,267	40,765
Oct. 28, 1944	78,535	39,097
Oct. 21, 1944	78,601	39,352
Nov. 6, 1943	72,032	40,647
Cumulative Totals for Canada		
Nov. 4, 1944	3,100,766	1,691,860
Nov. 6, 1943	2,919,586	1,763,335
Nov. 7, 1942	2,867,976	1,498,558

Dismissed Military Traffic Will Be Heavy

Mustering-in rail traffic, which was of considerable volume, will appear small when, after the war, the military is mustered out at the several dismissal camps throughout the country. Col. George H. Cushman, commanding officer of the sixth service command at Ft. Sheridan, Ill., told the Traffic Club of Chicago at its Armistice Day luncheon on November 10. Men in service will be anxious to get home, he said, and the dismissal camps will release them within 48 hr. after their arrival. With a large number of dismissal camps located throughout the country, he continued, the distance the discharged personnel will have to travel to their homes will be very short.

Emergency Board in Dispute on Bingham & Garfield

President Roosevelt has appointed an emergency board under section 10 of the Railway Labor Act to consider a dispute between the Bingham & Garfield and its employees represented by the Brotherhood of Locomotive Firemen & Enginemen over a demand for assignment of a second man on "trolley-electric" locomotives weighing more than 90,000 lbs. Members of the board are Judge Richard F. Mitchell of the Iowa Supreme Court, Walter C. Clephane, Washington, D. C., attorney, and Dr. A. G. Crane, former president of the University of Wyoming.

The board will open public hearings on November 24 at the Hotel Utah in Salt Lake City, Utah.

Personnel Needs Rise to 99,000 on October 1

Personnel needs of the railroad industry amounted to 99,000 additional workers at the beginning of October as compared with 91,000 at the beginning of September and 116,000 on October 1, 1943, according to figures compiled by the U. S. Railroad Retirement Board. Employers in all areas of the country except the Northeast reported increased needs. To some extent the increases may have been caused by the return of students to school and to the withdrawal of workers from railroad jobs to harvest farm crops. In addition, serious shortages of train-and-engine service workers have developed in the Far West.

The estimate of personnel needs for the entire industry as of October 1 is based on a tabulation of figures received from 187 employers in which shortages of 90,000 workers were reported. Reports from employers who reported in both September and October indicate that needs increased in all occupational groups except miscellaneous unclassified occupations. As in the preceding month there was a substantial rise in the number of jobs open for trainmen and enginemen. The additional 11 per cent in needs for workers in this group resulted from reports of more vacant jobs than on September 1 in all but one of the occupations in the group. A larger increase in unfilled jobs, 14 per cent, was reported for skilled trades helpers and apprentices. While increases were noted in a majority of the occupations in the group, the largest were those for machinist helper, carman helpers, and bridge-and-building helpers.

The number of additional laborers needed was 8 per cent above the number needed on September 1. Needs for maintenance-of-way laborers and freight handlers did not change much from the preceding month, but the unfilled demand for shop, ore-dock, and miscellaneous laborers was substantially larger. In the skilled trades journeymen group and the executives, professional men, telegraphers and clerks group needs were 5 per cent above those for September.

In the three western areas the number of additional workers needed by railroad employers again increased. Employers reporting in both September and October indicated that nearly 24 per cent more jobs were open in the Northwest, 9 per cent more in the Far West, and 7 per cent more in the Southwest. While needs were larger in all but 1 or 2 of the occupational groups in each of these areas, some of the more significant rises were in needs for trainmen and enginemen in the Northwest and Far West; in needs for skilled workers, helpers and apprentices, and laborers in the shops in all three areas; and in the need for ore-dock laborers for the closing weeks of the iron-ore season in the Northwest.

In the Southeast shortages were 13 per cent greater than in the preceding month. Needs increased in all occupational groups, but the largest increases were in needs for additional trainmen and enginemen and laborers. In the other two areas the lack of a report from the Pennsylvania makes a definite statement as to total needs impossible. For those employers reporting in both months, however, shortages went up 5 per cent in the area around the Great Lakes and down 4 per cent in the Northeast. Needs for trainmen and enginemen appeared to be somewhat smaller than in the preceding month in both areas, and needs for maintenance-of-way laborers were significantly smaller in the Northeast. More skilled trades workers and helpers and apprentices were desired than a month earlier.

Personnel Needs on October 1, 1944 of Employers Reporting for Both September and October

Occupational group	Needs reported: Number	Per cent of total	Per cent of September
1. Executives, professional men, telegraphers, and clerks	3,900	4.3	105.0
2. Trainmen and enginemen	7,609	8.4	111.0
3. Skilled trades journeymen	13,409	14.9	105.1
4. Skilled trades helpers and apprentices	13,738	15.2	113.8
5. Laborers	49,599	55.2	107.5
6. Attendants, cooks, porters, and waiters	1,119	1.2	100.7
7. Miscellaneous	761	0.8	93.6
Total	90,135	100.0	108.0

Maintenance of Air Brakes

In a paper read before the Eastern Car Foreman's Association in New York on November 10, C. D. Stewart, director of engineering, Westinghouse Air Brake Company, dealt with the maintenance of air-brake equipment from the standpoint of the engineers responsible for design and development. It was, he stated, his belief that an understanding of why certain materials and designs have been chosen could be helpful to those called upon to keep air-brake equipment in serviceable condition. He selected three items for discussion: pipe fittings, cleaning of operating parts and lubrication of parts.

Tracing the developments which have led to a decrease in brake-pipe breakages because of better anchoring and the disappearance of wooden underframe cars, Mr. Stewart brought out the fact that this had led the manufacturers to design their quick-service feature which was only possible because of the assured integrity of the car piping. In the transition stage, it was not uncommon to find trains with brake-pipe leakage so low that rear-car brakes would not apply even with a substantial reduction in pressure. This was because the original design of the K-type brake contemplated a certain amount of brake-pipe leakage. Advantages, he stated, which have accrued from reduced leakage were more prompt and reliable release of brakes after application and a considerable saving in air. Maintenance and application practices which contribute to good piping and low leakage were discussed.

In dealing with the cleanliness of parts, Mr. Stewart pointed out that the relatively short cleaning period for air brakes of

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS

Compiled from 131 reports (Form IBS) representing 135 steam railways
(Switching and Terminal Companies Not Included)

Income Items	All Class I Railways: For the month of August 1944	For the month of August 1943	For the eight months of 1944	For the eight months of 1943
1. Net railway operating income	$101,365,614	$132,271,087	$758,577,199	$972,297,165
2. Other income	14,118,986	13,639,927	119,579,636	111,111,624
3. Total income	115,484,600	145,911,014	878,156,835	1,083,408,789
4. Miscellaneous deductions from income	2,617,136	2,563,930	27,255,334	19,617,967
5. Income available for fixed charges	112,867,464	143,347,084	850,901,501	1,063,790,822
6. Fixed charges:				
6-01. Rent for leased roads and equipment	15,789,581	13,840,253	105,943,345	116,639,370
6-02. Interest deductions[1]	33,851,295	35,631,503	274,691,502	288,391,464
6-03. Other deductions	135,639	117,889	1,039,206	982,967
6-04. Total fixed charges	49,776,515	49,589,645	381,674,053	406,013,801
7. Income after fixed charges	63,090,949	93,757,439	469,227,448	657,777,021
8. Contingent charges	2,744,498	2,435,087	22,022,171	19,074,519
9. Net income	60,346,451	91,322,352	447,205,277	638,702,502
10. Depreciation (Way and structures and Equipment)	26,874,037	26,481,941	213,007,242	210,472,024
11. Amortiaztion of defense projects	16,177,182	11,106,167	120,969,795	88,975,703
12. Federal income taxes	132,326,407	139,801,830	895,822,574	938,460,147
13. Dividend appropriations:				
13-01. On common stock	15,281,758	16,886,352	90,417,473	87,014,641
13-02. On preferred stock	4,145,891	4,145,894	19,930,287	19,709,267
Ratio of income to fixed charges (Item 5 ÷ 6 – 04)	2.27	2.89	2.23	2.62

Selected Asset and Liability Items	All Class I Railways: Balance at end of August 1944	Balance at end of August 1943
20. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	$583,735,490	$564,189,127
21. Cash	1,203,174,228	1,345,143,776
22. Temporary cash investments	1,864,990,161	1,347,008,251
23. Special deposits	154,395,733	160,394,927
24. Loans and bills receivable	329,431	271,694
25. Traffic and car-service balances—Dr.	45,186,922	39,464,878
26. Net balance receivable from agents and conductors	147,310,940	175,976,201
27. Miscellaneous accounts receivable	629,946,993	609,815,241
28. Materials and supplies	598,736,732	524,500,742
29. Interest and dividends receivable	28,424,292	20,319,455
30. Rents receivable	1,628,310	1,318,545
31. Other current assets	65,165,795	54,798,759
32. Total current assets (items 21 to 31)	4,739,289,537	4,279,012,469
40. Funded debt maturing within 6 months[2]	226,799,482	154,026,245
41. Loans and bills payable[3]	12,263,386	15,013,928
42. Traffic and car-service balances—Cr.	205,609,249	152,491,656
43. Audited accounts and wages payable	475,886,340	409,164,367
44. Miscellaneous accounts payable	125,812,133	114,598,905
45. Interest matured unpaid	39,481,890	38,990,839
46. Dividends matured unpaid	20,936,153	6,800,582
47. Unmatured interest accrued	70,330,847	71,961,352
48. Unmatured dividends declared	21,200,397	22,957,520
49. Unmatured rents accrued	24,238,875	23,789,932
50. Accrued tax liability	1,950,520,988	1,615,772,444
51. Other current liabilities	95,313,372	73,535,665
52. Total current liabilities (items 41 to 51)	3,041,593,630	2,545,077,190
53. Analysis of accrued tax liability:		
53-01. U. S. Government taxes	1,788,357,437	1,452,715,104
53-02. Other than U. S. Government taxes	162,163,551	163,057,340

[1] Represents accruals, including the amount in default.
[2] Includes payments of principal of long-term debt (other than long-term debt in default) which will become due within six months after close of month of report.
[3] Includes obligations which mature not more than one year after date of issue.
Compiled by the Bureau of Transport Economics and Statistics, Interstate Commerce Commission. Subject to revision.

earlier designs resulted from the fact that they were not fully protected against the entrance of dirt during service. Newer designs are effectively sealed and have adequate filtering arrangements where needed and, therefore, the possibilities for the entrance of dirt occur almost entirely between the air-brake shop and the point of application, or during application itself. He recommended the use of shipping covers or some other means of protection for overcoming the first possibility and clean working conditions to overcome the chance of dirt entering the parts during application.

The development of proper lubricants for air brakes has been studied for a considerable period of time, Mr. Stewart continued, and the present brake-cylinder lubricant represents a fully service-tested product. The brake-cylinder lubricant as recommended by the A. A. R. is one which represents the work of lubricant manufacturers in developing a product which met performance specifications set by the brake manufacturers. The latter made no specification as to what was to go into the lubricant but stated definitely the things which it was expected to do. According to Mr. Stewart the lubricant is now available from a number of suppliers who meet the service requirements but railroads have been slow to standardize on the grease. The reaction of brake manufacturers to suggestions that the specifications be made less rigid is that they are interested in proper lubrication for long service life and no lubricant of lower quality will provide the desired results. He said that the use of inadequate and undesirable triple-valve lubricating oils should also be discontinued, and that the presently recommended oil is one which will retain its original viscosity for its entire service period because there is no tendency for it to oxidize.

In conclusion, the speaker said that there was no intention on the part of the manufacturers to dictate how work should be done but that they felt certain that practices which they recommended would go a long way toward insuring trouble-free brake operation.

Unions Indorsed 130 Losers in House Elections

Nearly half of the Congressional candidates listed in a recent issue of "Labor" as having been indorsed by "the chiefs of our Standard Railroad Labor Organizations on recommendation of our national legislative representatives" were defeated in the election, but the "chiefs'" record on picking winning Senators was relatively better. While some contests remain in doubt, returns which are thus far final show that defeat came to some 130 of the 287 House candidates endorsed by the labor leaders. They picked 13 winners out of 23 Senatorial candidates indorsed.

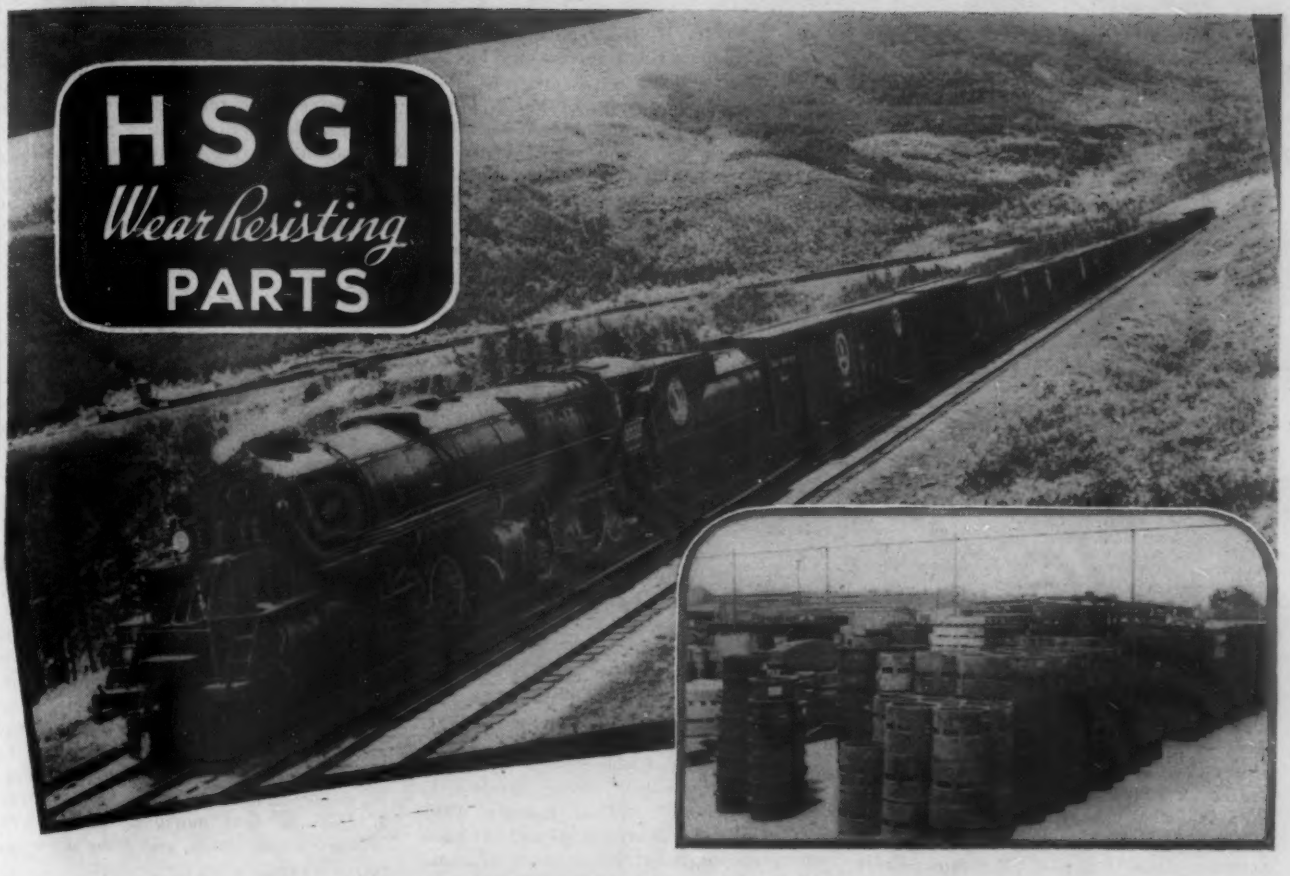
As "Labor" put it, party labels were ignored by the "chieftains," each candidate's record being "the only yardstick." Presumably the "record" involved was that on labor legislation generally, for indorsement was denied some members of the Senate and House committees on interstate commerce who did much work on such major transportation legislation as the Transportation Act of 1940 and the House-approved land-grant repealer which is now pending before the Senate.

These included Senator Reed, Republican of Kansas, and Representatives Halleck of Indiana, Hinshaw of California, Holmes of Massachusetts, Republicans, and Boren of Oklahoma, Democrat. All of them were nevertheless reelected.

Meanwhile, the indorsements ran all the way from that which O. K.'d the American Labor Party's Vito Marcantonio of New York to those which approved Chairman Lea of the House committee on interstate commerce, who was unopposed in the election, and Representative Charles A. Wolverton, of New Jersey, the committee's ranking Republican member who, presumably, would have become chairman if the Republicans won the House. The "chiefs'" blessing had been bestowed also on the reelected Clare Boothe Luce of Connecticut, and on the defeated Hamilton Fish of New York.

Appraising the results in its November 11 issue, "Labor" noted that Danaher of Connecticut, Nye of North Dakota, and Davis of Pennsylvania were the Senatorial "casualties" reported at the time the article was written. Other Senatorial indorsees who were defeated include Barney L. Whately, Democrat of Colorado, Henry F. Schricker, Democrat of Indiana, Thurman Hill, whom Clyde Reed defeated in Kansas, George M. Bradshaw, Democrat of South Dakota, and Harry Sauthoff, Progressive of Wisconsin. The labor lead-

News Department continued on next left-hand page



The SERVICE that backs the POWER

WHATEVER unusual demands you are forced to put on your motive power these days, it is good to know that Hunt-Spiller service is there to back it up and help keep locomotives out on the line. The use of HUNT-SPILLER *Air Furnace* GUN IRON in vital parts is an aid in maintaining high availability; HSGI parts on the stock platform expedite necessary replacements. Rely, as many roads do, on HSGI castings, packing and lightweight valves and pistons. For greatest efficiency, don't overlook a single application.

HSGI
Reg. U. S. Trade Mark
Cylinder Bushings
Cylinder Packing Rings
Pistons or Piston Bull Rings
Valve Bushings
Valve Packing Rings
Valve Bull Rings
Crosshead Shoes
Hub Liners
Shoes and Wedges
Floating Rod Bushings

Finished Parts
Dunbar Sectional Type Packing
Duplex Sectional Type Packing
for Cylinders and Valves
(Duplex Springs for Above
Sectional Packing)
Cylinder Snap Rings
Valve Rings, All Shapes
Light Weight Valves
Cylinder Liners and Pistons
for Diesel Service

HUNT-SPILLER MFG. CORPORATION
N. C. Raymond, *President* E. J. Fuller, *Vice-Pres. & Gen. Mgr.*

Office & Works
383 Dorchester Ave, South Boston 27, Mass.

Canadian Representative: Joseph Robb & Co., Ltd., 5575 Cote St. Paul Rd., Montreal, P. Q.
Export Agent for Latin America:
International Rwy. Supply Co., 30 Church Street, New York, N. Y.

HUNT-SPILLER GUN IRON
Air Furnace

ers came out O. K. in the Oregon Senatorial race where they had indorse the successful Wayne L. Morse, who was chairman of the emergency board which effected settlement of the 1941 wage case and more recently served as a "public" member of the National War Labor Board.

While listing the "casualties," as noted above, "Labor" at the same time found much to be thankful for in the reelections of Senators Wagner of New York and McCarran of Nevada. And a special dispatch reported that "'Our Bob' Crosser [Democrat of Ohio] is coming back to Washington with the biggest majority of his long and distinguished career."

I.C.C. Gives Carrier Status to Allied Vans

(*Continued from page 789*)

Rogers. However, Mr. Rogers was confirmed last January.

Convenience and Necessity Basis—In the present report, Division 5 departs from the Croft recommendations in that it dismisses Allied's "grandfather" application and grants the nationwide rights on the basis of the public convenience and necessity showing made in the accompanying "extension application," filed by the applicant "as a precautionary measure in the event its 'grandfather' application should be denied in whole or in part." Examiner Croft would have built up the nationwide rights by granting the "grandfather" application to cover most of the operations and filling the gaps with grants under the extension application.

Meanwhile the Croft report's basis for according carrier status was accepted by the commission, the favorable action being bottomed on the so-called "C-service," a plan under which Allied has written agreements with certain of its affiliates who agree to furnish on call certain equipment that may be dispatched indiscriminately by Allied without the usual effort to return such equipment to its home base. This "C-service" and its less formalized predecessor, "B-service," are found to have been extensive and to qualify Allied for certificates under the rule of the Dixie Ohio decision by Division 5 (17 M.C.C. 735) as amplified by the full commission in the Boston & Maine case (34 M.C.C. 599).

Dixie Ohio Precedent—The Dixie Ohio case rule stipulated that where an applicant claims common-carrier status and does not own vehicles, there must be a showing that the vehicles are operated under the applicant's "direction and control and under its responsibility to the general public as well as the shipper." In the Boston & Maine case, the commission broadened this rule with its finding that "direction," "control," and "responsibility" are "conclusions dependent upon the facts presented in each individual case"; and the question cannot be decided "by the existence of any single factor such as the name used on the bill of lading or displayed on the vehicle, the method of payment for the service performed, or the terms of the agreement between the parties."

An appendix to the report sets up in parallel columns the responsibility for vehicles utilized which is exercised by Dixie Ohio Express Company, Boston & Maine Transportation Company, and Allied. "Examination thereof," the report continues, "will disclose that as to each indicia of control or responsibility Allied's position [with respect to 'C-service'] is as strong as" that of the other two, both of which "were found to have carrier status." Moreover, "in a number of respects," Allied's position "is definitely stronger than that of the Boston & Maine Transportation Company."

Meanwhile, the commission found that Allied has no carrier status with respect to its so-called "A-service," which involves shipments hauled by its affiliates within the scope of their own certificates. The report also disposes of various other contentions with respect to the status question and complaints against Allied operations and practices. Most of the practices complained of were found to have sprung "from uncertainty as to the rights of Allied and its agents," and none of them "is such as cannot readily be corrected."

The report noted that "although various rail carriers are nominal protestants," the Allied applications were opposed "principally by the Independent Movers and Warehousemen's Association and a comparatively few individual motor carriers of household goods." As of January, 1944, Allied had 272 booking agents and 354 hauling agents located at 365 points in 47 states and the District of Columbia. Nevada was the only state in which none was located. In the year ended December 31, 1943, Allied and its agents transported in all services 110,323 tons in 51,048 shipments averaging 2.3 tons each. The 1943 gross revenue was $9,297,743. About one-fourth of the total business from the viewpoint of both revenue and number of shipments is now carried in the "C-service."

Grain Parity Order Vacated

The Interstate Commerce Commission has ordered set aside all outstanding orders and findings in its No. 17000 proceeding, part 7, to the extent that they require, or have been interpreted as requiring, a parity in rates on so-called coarse grains (corn, oats, barley, and certain products, and sorghum grains) and wheat.

This order resolves a situation in which western railroads had been denied authority to apply so-called normal rates on coarse grains, in compliance with the parity provisions of the orders in the general rate structure investigation, even though the commission had refused to extend further the time within which they were allowed to apply "emergency rates" averaging about 70 per cent of the normal rates. Thus the way is opened for the carriers and shippers to carry out the "suggestion" in the commission's I. & S. No. 5236 report (noted in *Railway Age* of April 22, page 795) that they "endeavor to work out a modified permanent adjustment which will fit the needs of the traffic and eliminate to the fullest extent" certain "preferential" characteristics of the below-parity rates.

At the time the restoration of normal rates on the coarse grains was denied, the commission issued an order to "show cause" why the parity provisions should not be permanently set aside throughout the western district, and the present order, accomplishing that action, was a result of consideration of returns to the show-cause order. The suspension of parity requirements, under which the emergency rates had been effective, had previously been extended to terminate January 1, 1945.

Proposes Plan to Revamp C. of Ga.

(*Continued from page 790*)

of continued operation under leases. Likewise recommended for approval is the proposal to make the reorganization plan effective as of January 1, 1944. Not approved by the examiner is the trustee plan's proposal to set up a voting trust for the reorganized company's common and preferred stock. There is "no sufficient reason" for that, the proposed report says.

The examiner's plan for the allocation of the new securities would result in the Reconstruction Finance Corporation's receiving $4,757,381 of the reorganized company's common stock. The total principal and interest of R. F. C.'s claim is $4,761,624; and it would receive, in addition to the common stock, $365,938 in cash, $212,788 in first mortgage bonds, $344,370 in income bonds, and $586,847 in preferred stock.

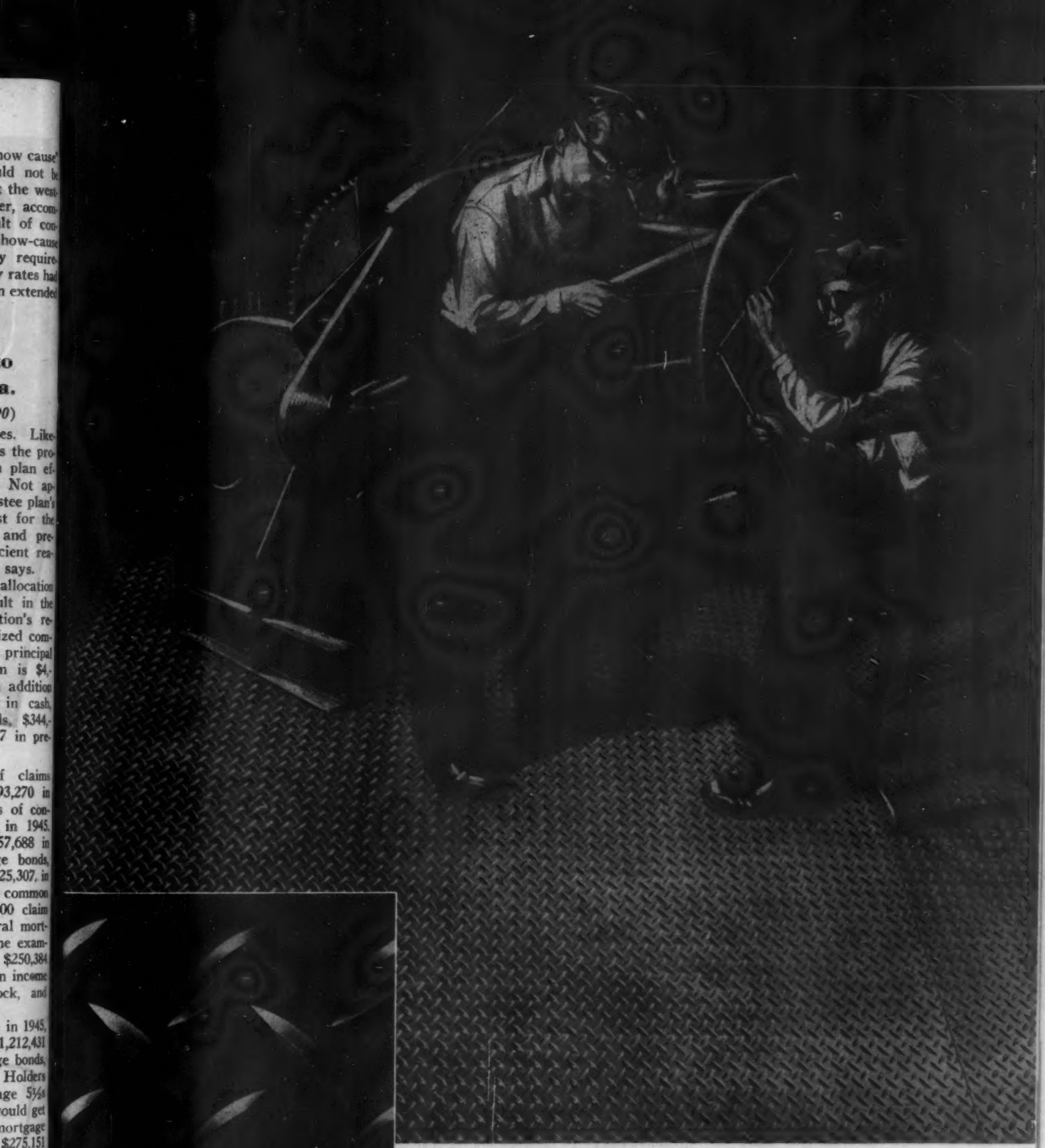
Largest Claims—Largest of claims against the debtor is the $28,893,270 in principal and interest due holders of consolidated mortgage 5s, maturing in 1945. These holders would receive $757,688 in cash, $2,447,722 in first mortgage bonds, $8,448,146 in income bonds, $12,925,307 in preferred stock, and $4,745,848 in common stock. Next comes the $20,312,500 claim of holders of refunding and general mortgage 5s due in 1959. To these, the examiner would allocate $35,583 in cash, $250,384 in first mortgage bonds, $405,214 in income bonds, $690,533 in preferred stock, and $5,597,927 in common stock.

Holders of first mortgage 5s due in 1945, claiming $9,420,833, would get $1,212,431 in cash, $5,385,583 in first mortgage bonds, and $2,822,819 in income bonds. Holders of refunding and general mortgage 5½s due in 1959, claiming $8,093,750, would get $14,178 in cash, $99,768 in first mortgage bonds, $161,462 in income bonds, $275,151 in preferred stock, and $2,230,559 in common stock. Holders of Southwestern Railroad Company capital stock in the amount of $5,047,100 would get $2,138,972 in first mortgage bonds and $1,720,901 in income bonds. The Railroad Credit Corporation would get about $104,000 in settlement of claims totaling approximately $355,000.

Hays Discusses Justice Department's Attack

Congress rather than the courts should determine whether regulation or unrestricted competition shall prevail in the transportation industry, Joseph H. Hays, counsel for the Western Association of Railway Executives, declared in an address before the Mountain States Association meeting at

News Department continued on next left-hand page



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"A.W." Rolled Steel Floor Plate provides safety from costly slipping accidents. Allows workers to perform their jobs with confidence and greater speed. Floors with heavy traffic receive permanent protection. No cracks, no ridges, no worn or slippery surfaces. No time out for repairs. Shown is the Super-Diamond Pattern which resists slipping in any direction. Can be installed overnight without disturbing production. Write for folder.

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ALAN WOOD STEEL COMPANY

MAIN OFFICE AND MILLS: CONSHOHOCKEN, PENNSYLVANIA : SINCE 1826. District Offices and Representatives: Philadelphia, New York, Boston, Atlanta, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, Houston, St. Paul, New Orleans, Pittsburgh, Roanoke, Sanford, N. C., St. Louis, Los Angeles, San Francisco, Seattle, Montreal.

Denver, Colo., on November 13. Mr. Hays urged "that the legislative debris" resulting from the anti-trust suit which the Department of Justice filed against the western railroads at Lincoln, Neb., last August "be cleared away by Congress and speedily, so that all of the productive forces of the nation which are geared to transportation can plan for the future."

"If the confusion resulting from this suit is allowed to continue in an industry as basic as transportation," Mr. Hays declared, "there is little prospect that the peace-time economy of this nation will be able to create and maintain the 60 million jobs which are needed. It is absurd to suppose that Congress has been overhauling the regulatory laws from time to time during the last half century, enlarging the powers of the Interstate Commerce Commission, and formulating new transportation policies in the light of modern conditions in conflict with the intent of the Sherman Anti-trust Act."

Mr. Hays said that laws recently passed by Congress regulating shipping and airlines expressly exempted them from the anti-trust act, and added, "it is inconceivable that Congress would require the railroads to co-operate under the Interstate Commerce Act and yet make them subject to prosecution under the anti-trust act for that co-operation.

"Postwar stability requires that this matter should not be allowed to drag its slow way through the courts but it should be settled promptly by the Congress whose responsibility it is to fix national policies."

Collision on Burlington

Four persons, a soldier and three civilians, were killed and six persons were injured at Fairmont, Neb., on November 12 when freight train No. 61 of the Chicago, Burlington & Quincy ran into the rear of passenger train No. 5 which operates as the Pioneer Zephyr between Lincoln, Neb., and McCook. According to preliminary reports, No. 5 was just leaving the station and No. 61, in a fog, over-ran, at 20 to 25 m.p.h., block signals and passed a fusee.

Some Changes in Congressional Transport Committees

Although all members of the Senate commitee of interstate commerce who were candidates won reelection, there will be some changes in the membership of the committee in the next Congress. Senators Smith of South Carolina and Clark of Idaho, Democrats, were defeated in primary elections, while Senator Truman will assume the Vice-Presidency and Senator Bone, Democrat of Washington, has been appointed to a federal judgeship.

Three Democratic and three Republican members of the committee were candidates in the election and all retained their seats. They are Senators Wagner of New York, Barkley of Kentucky, and Hill of Alabama, Democrats, and Tobey of New Hampshire, Reed of Kansas, and Gurney of South Dakota, Republicans. The Senatorial term of Committee Chairman Wheeler, Democrat of Montana, did not expire this year; and he is expected to continue as chairman in the new Congress.

On the House side, Chairman Lea of the committee on interstate and foreign commerce was reelected, being unopposed; and, with the Democrats continuing in control of the House, he will retain the chairmanship. There will, however, be some vacancies on the commitee, resulting from the defeat of Representative Scott, Republican of Pennsylvania, and the previous defeats in primaries of Representatives Newsome of Alabama, and Martin J. Kennedy of New York, Democrats. Another member—Representative Myers, Democrat of Pennsylvania——was not a candidate for reelection to the House, but instead was a candidate for the Senate, returns thus far tabulated indicating that he has defeated Senator Davis, Republican.

Equipment and Supplies

Several Roads Reveal Plans to Purchase Streamliners

That a new era of streamlined passenger train construction awaits the release of materials and manpower, is indicated by plans just disclosed by several railroads. In some instances, locomotives and cars have been definitely ordered while in others, the program for the construction of the trains may extend over a period of three to five years.

The Great Northern, one of the first to disclose its plans, will re-equip the "Empire Builder," which it operates from Seattle, Wash., to St. Paul, Minn., over its lines and from St. Paul to Chicago over the Chicago, Burlington & Quincy, with five Diesel-drawn streamlined trains to cost $7,000,000. The cars have been ordered from the Pullman-Standard Car Manufacturing Company and the locomotives from the Electro-Motive Division of the General Motors Corporation. At the same time, the running time of the "Empire Builder" will be shortened.

The Louisville & Nashville is planning a streamliner to operate between Cincinnati, Ohio, and New Orleans, La.

The Chicago & North Western is considering the extension of its fleet of "400's" into "granger" territory. It has reserved space with the car builders.

The Illinois Central is considering a new streamliner between Chicago and St. Louis, Mo., and the transfer of its pre-war "Green Diamond" from this service to its Chicago-Waterloo, Iowa, service. The Chicago & Eastern Illinois is considering streamlined trains for its Chicago-St. Louis and Chicago-Evansville service. It has asked car builders for prices to submit to the board.

The Atchison, Topeka & Santa Fe plans to extend its streamlined service from Ft. Worth, Tex., to Galveston and to other lines. It has 80 cars on order.

The Southern Pacific expects to re-equip its "Cascade," operating between Oakland, Cal., and Portland, Ore., as a streamliner.

The Chicago, Rock Island & Pacific is considering the purchase of streamliners, having asked for prices. Other companies that have reserved space with car builders are the Pere Marquette, the New York Central and the Northern Pacific.

LOCOMOTIVES

The St. Louis-San Francisco's trustees have been authorized by the federal district court at St. Louis to spend $549,500 for the purchase of seven Diesel-electric switching locomotives.

The National Railways of Mexico are expected to place orders soon for 32 new steam locomotives of 4-8-4 wheel arrangement.

The Reading has authorized the reconversion of 20 consolidation type steam locomotives of 2-8-0 wheel arrangement into modern 4-8-4 type freight locomotives in its Reading, Pa., shops at a cost of approximately $2,800,000. New tenders will be applied to the engines. Construction is scheduled to begin in May, 1945 and the program calls for an output of two locomotives each month.

FREIGHT CARS

The Grand Trunk Western is inquiring for 500 50½-ft. box cars of 40 tons' capacity.

The Great Northern is inquiring for 500 40½-ft. alloy steel gondola cars of 50 tons' capacity.

The Atchison, Topeka & Santa Fe has begun a program for the rebuilding of 1,500 50-ton box cars in its shops at Topeka, Kan. Because of the man-power shortage, which limits the force to 350 men, the output per day since November 1 has been six cars.

SIGNALING

The Boston & Maine has placed an order with the General Railway Signal Company for a desk type control machine having 3 rotary signal levers (with-indication lights), 4 push buttons and 5 track indication lights. This machine is to be used in a unit-wire interlocking layout at Lobby Number One, Springfield, Mass.

Construction

Chicago, Rock Island & Pacific.—This road has started a complete reconstruction and rearrangement of its coach yards and shops at Chicago, which will be completed at a total cost of $1,190,000. Included in the project will be the relocation of wheel pits and water, air, steam and gas lines, and the construction of a new testing laboratory, oil storage building, steel, machine, cabinet, electric, pipe, tin and airbrake shops, and office, locker and stock rooms. The new yard will have nine service tracks separated by concrete platforms and one track for handling spare wheels. An automatic car washer will be installed through which trains will pass as they are brought into the yard.

Supply Trade

W. H. Russell has been appointed district manager of the southeastern district sales office of the **Baldwin Locomotive Works** with headquarters at St. Louis, Mo. Mr. Russell was graduated from Illinois University. He formerly was associated



W. H. Russell

with the Illinois Central for several years, with the American Locomotive Company in Cleveland, Ohio, for seven years, and, prior to joining Baldwin, with the Elastic Stop Nut Corporation of Newark, N. J.

The **Koppers Company,** American Hammered Piston Ring Division, Baltimore, Md., has been awarded the Army-Navy "E," with three stars, for continued meritorious production achievement.

Raymond F. Kelley has been appointed accounting assistant to the president of the **American Brake Shoe Company.** Mr. Kelley served as a lieutenant in the Navy during the first world war and has been with the Brake Shoe organization since 1920. He has been assistant comptroller of the parent corporation since 1929.

The **Briggs Clarifier Company** has appointed the **M. N. Dannenbaum Company,** Houston, Tex., as its distributor in east Texas and the Gulf coast territory and **McGregor & Werner, Inc.,** Washington, D. C., as its distributor in Maryland, Delaware, and the District of Columbia.

Bennett Burgoon, Jr., for several years representative at Rockford, Ill., for **Kennametal, Inc.,** Latrobe, Pa., has been appointed district manager in charge of the company's Detroit, Mich., office, which has been moved to larger quarters at 5531 Woodward Avenue.

H. S. Keppelman, for the past two years assistant director—cars, railway transport division of the Office of Defense Transportation, has been appointed vice-president of the **O. C. Duryea Corporation,** with headquarters in New York. Prior to his appointment with the O. D. T., Mr. Keppelman was superintendent, car department for the Reading, with which railroad he had been associated in various capacities since 1906.

OBITUARY

J. W. Sullivan, chairman of the board of Skilsaw, Inc., died on October 26 at Evanston, Ill., at the age of 73 years. He became president of the company in 1926 and was elected chairman of the board in 1942.

Financial

ATLANTIC COAST LINE.—*Acquisition of Florida East Coast Stock.*—The Interstate Commerce Commission has been advised that this company has entered into an arrangement to acquire 60 per cent of the new common stock of the Florida East Coast, upon that road's reorganization. This action apparently would depend upon approval by the commission of a modified plan of reorganization of the F. E. C. substantially along the lines of one which a committee representing certain security holders has asked it to consider. The A. C. L. would pay $3,600,000 for the stock and would guarantee interest and sinking fund payments, but not the principal, of new F. E. C. first mortgage bonds. The commission has had proposed plans for the F. E. C. reorganization before it for some months, following failure of the court to approve a plan submitted to it.

BALTIMORE & OHIO.—*Awards Equipment Notes.*—On November 9, Roy B. White, president of the Baltimore & Ohio, announced that the company had accepted a bid by the Philadelphia National Bank, Philadelphia, Pa., of an interest rate of 1.68 per cent on $706,500, principal amount, of equipment notes, series F, payable in 30 quarterly instalments. The notes will be issued, subject to the approval of the Interstate Commerce Commission in connection with the purchase of ten 1,000-hp. Diesel-electric switching locomotives to be built by the Baldwin Locomotive Works for service at the company's Baltimore, Md., terminals. Previous item in *Railway Age* of November 4, page 707.

BALTIMORE & OHIO.—*Requests Bids on Notes.*—The Baltimore & Ohio has requested bids on a proposed $632,351 issue of promissory notes, series E, subject to the approval of the Interstate Commerce Commission. The notes will be dated December 1, 1944, and mature in 30 consecutive equal quarterly installments, beginning May 1, 1945. The proceeds are to be applied to the purchase of two 4,000-hp. Diesel-electric passenger locomotives from the Electro-Motive Division of the General Motors Corporation, deliveries of which are expected in January, 1945.

FLORIDA EAST COAST.—*Reorganization.*—A committee representing certain holders of securities of this road, in process of reorganization, has asked the Interstate Commerce Commission to permit the filing of another plan of reorganization, the effect of which, if approved by the commission, would be acquisition by the Atlantic Coast Line of 60 per cent of the new common stock of the F. E. C. and assumption by that road of liability, as guarantor, for the interest and sinking fund payments on the new F. E. C. first mortgage bonds. The commission has had proposed reorganization plans under consideration for several months, the federal court having returned without its approval the plan which the commission adopted (outlined in *Railway Age* of April 18, 1942, page 795).

The plan which the committee seeks to offer would set up a new capitalization consisting of $16,000,000 of first mortgage 4 per cent bonds, $15,000,000 of 4½ per cent preferred stock (cumulative within limits), and $6,000,000 of common stock, plus undisturbed equipment obligations. The old company's first mortgage bondholders would receive $12,000,000 in cash. The new securities and $6,000,000 in cash would be distributed pro rata to the holders of old first and refunding mortgage bonds, from whom the A. C. L. would purchase 60 per cent of the common stock for $3,600,000 cash.

DELAWARE & HUDSON.—*Rensselaer & Saratoga Merger.*—On November 8, stockholders of the Rensselaer & Saratoga voted to merge with the Delaware & Hudson. Under the original merger proposal, the Delaware & Hudson has the option to reject the consolidation if 90 per cent of the Rensselaer & Saratoga stockholders do not approve the plan.

GULF, MOBILE & OHIO.—*Promissory Notes.*—This company has applied to the Interstate Commerce Commission for authority to issue $188,370 of 2 per cent promissory notes in connection with its purchase, under a conditional sales arrangement, of two diesel-electric road switching locomotives from the American Locomotive Co. Such financing is desirable, the commission was informed, because the road has arranged for the purchase of road freight diesel-electric power to replace its steam locomotives at a cost of around $9 million, and expects that the first application for authority to issue securities for this purpose will be filed early in 1945.

MISSOURI PACIFIC.—*Payment of Bonds.*—The trustee of the Missouri Pacific has petitioned the Federal district court at St. Louis, Mo., for permission to pay $10,352,400 principal amount of St. Louis Iron Mountain bonds. Currently, there is $24,153,600 principal amount of these bonds outstanding. The amount to be paid off would receive an equal amount of 3½ per cent collateral trust notes under the reorganization plan and the balance would receive a similar amount of first mortgage bonds.

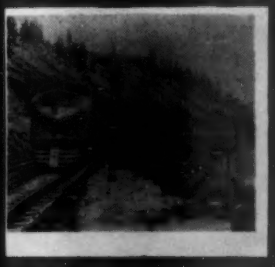
SOUTHERN.—*Georgia, Southern & Florida.*—On November 22, stockholders of the Georgia, Southern & Florida will vote on a proposal to form a new corporate organization disassociated from the Southern, which owns the controlling stock interest. Committees have been formed to represent stockholders of the railroads first mortgage 5 per cent bonds and the preferred stock. Organization of the committees is the result of the Southern's notification on August 15 that it could not advance funds to meet the Georgia, Southern & Florida's $4,000,000 bond maturity due July 1, 1945 or guarantee a refunding issue. (Previous

News Department continued on second left-hand page


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1944
TO PERMIT TODAY'S TRAINS TO
MOVE AT SHORTER INTERVALS
WITH HEAVIER LOADS AT HIGHER
SPEEDS—SAFELY.









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Give an "Advance Showing" of the Transportation of Tomorrow

The "Transportation of Tomorrow" that is talked about today will be a continued expansion of an already established trend.

Streamliners have already set the pattern of riding appeal in speedy, luxurious passenger service. And on them Westinghouse HSC equipment is helping to maintain schedules with safety.

The HSC's governor-controlled braking pressures automatically proportion the braking effect to the speed.

The HSC's electric transmission flashes application and release impulses the length of the train with the speed of light.

The HSC's Decelostat acts instantly to "soften," momentarily, braking pressure on individual wheels when wheel slip impends.

Whatever your plans for the future, you'll find the HSC a complete answer to the passenger brake requirements.

WESTINGHOUSE AIR BRAKE COMPANY, WILMERDING, PA.

75 Years of Pioneering



item in the *Railway Age* of August 26, page 358.)

SEABOARD AIR LINE.—*Bond Call and Interest Payments.*—The United States district court at Norfolk, Va., on petition of the reorganization committee of the Seaboard Air Line, has authorized the railroad to purchase all first mortgage bonds of the Tampa Northern at principal and accrued interest to December 1, or $1,095 per $1,000 bond. The court also authorized the payment of back interest due from July 1, 1939 to January 1, 1944, exclusive of the previously paid first six months of 1942, on the first consolidated mortgage 4 per cent bonds of the Carolina Central; and from July 1, 1939 to January 1, 1943, exclusive ot the already paid first six months of 1942, on the first consolidated mortgage 5 per cent bonds of the Florida Central & Peninsula. These latter bonds matured January 1, 1943, and 6 per cent interest will be paid for 1943.

Average Prices Stocks and Bonds

	Nov. 14.	Last week	Last year
Average price of 20 representative railway stocks..	42.00	42.37	34.55
Average price of 20 representative railway bonds..	90.36	90.78	78.25

Dividends Declared

Albany & Vermont.—(year-end) $1.00, payable November 15 to holders of record November 1.

Montgomery & Erie.—17½¢, semi-annually, payable November 10 to holders of record October 31.

New York Central.—(year-end) $1.00, payable January 15, 1945, to holders of record November 25, 1944.

Pennsylvania.—(year-end) $1.50, payable December 12 to holders of record November 18.

Pittsburgh & Lake Erie.—$2.50, payable December 15 to holders of record November 20.

Pittsburgh, Youngstown & Ashtabula.—7% preferred, $1.75, quarterly, payable December 1 to holders of record November 20.

Rutland & Whitehall.—$1.06, payable November 15 to holders of record November 1.

Abandonments

CHICAGO, BURLINGTON & QUINCY.—Division 4 of the Interstate Commerce Commission has authorized this company to abandon a line from Mt. Ayr, Iowa, to Grant City, Mo., 21.8 miles, this being a segment of the more westerly of two Burlington lines between Giles, Iowa, and Albany Junction, Mo. The application was opposed by the state commission and certain labor organizations. The authorization was made subject to stated conditions for the protection of any employees adversely affected. It is provided that any employee placed in a worse position as to wages or working rules shall be paid a monthly displacement allowance sufficient to make up the difference in compensation for a period of four years, the monthly compensation received in the job lost to be determined by dividing by 12 separately the total compensation received and the total time worked during the last 12 months worked by him preceding displacement. A similar provision is made for any other employee who, through application of seniority rules, loses his employment to one displaced as a result of the abandonment, provided he accepts other employment with the carrier if offered. Rights to passes, relief, pensions, etc., remain alive for displaced employees so long as they are entitled to compensation. Another condition provides against loss to the displaced employee on account of selling his home, or for protection against penalties or loss of equity where he is buying a home, when he is required to change the place of his employment as a result of the abandonment.

DELAWARE, LACKAWANNA & WESTERN.—Upon petition of the Order of Railroad Telegraphers for rehearing, Division 4 of the Interstate Commerce Commission has reopened for reconsideration on the question of imposition of conditions for the protection of emplyees adversely affected its finance dcket proceedings in which conditional authority was granted this road to abandon a line from Alford Junction, Pa., to Montrose, 9.93 miles.

WABASH.—At this road's request, Division 4 of the Interstate Commerce Commission has reopened for reconsideration its proceeding in the application for authority to abandon a branch from Helmer, Ind., to Stroh, 4.83 miles. The application was denied in February, 1943, without prejudice to a renewal after one year if operation continued to show a loss.

Railway Officers

EXECUTIVE

Henry F. McCarthy, who resigned September 1, as assistant director of the Office of Defense Transportation in charge of the Division of Railway Transport, to return to his former position as passenger traffic manager of the Boston & Maine, has been appointed executive assistant to the president of the New York, New Haven & Hartford.

Born at Portsmouth, N. H., May 11, 1906,



Henry F. McCarthy

Mr. McCarthy was graduated *magna cum laude* at Harvard University, in 1927, and received his master of science degree in transportation at Yale University, in 1930. In 1927, he had entered railway service in the construction division, engineering department, of the Baltimore & Ohio, where he remained until 1929. From 1930 to 1932, he served in various positions in the traffic department of the St. Louis-South Western, for which railroad he served subsequently as assistant to vice-president, traffic, and as assistant general traffic manager. In 1934 he went with the Boston & Maine and Maine Central as general passenger agent. In 1936 he was appointed passenger traffic manager of those roads. He was traffic manager also of Boston-Maine Airways.

George Moore Nolen, whose appointment as assistant to the vice-president of the Southern at Columbia, S. C., was announced in the *Railway Age* of November 4, was born in Gaston County, N. C., on December 28, 1883, and entered railroad service with the Southern in 1911 as a billing clerk in the traffic department at Charlotte, N. C., where he was subsequently promoted to rate clerk and chief clerk. On November 1, 1916, he was appointed executive clerk in the general freight office at



George Moore Nolen

Atlanta, Ga., transferring to Birmingham, Ala., as chief clerk to the assistant freight traffic manager in March, 1920. Soon after he was assigned to special work in the commerce department at Washington, D. C., and in March, 1921, he was named chief clerk to the freight traffic manager at Washington. On November 1, 1922, Mr. Nolen was advanced to division freight agent at Columbia, serving in this capacity until August 1, 1925, when he became assistant to freight traffic manager at Atlanta. Two years later he was appointed commerce agent at Washington, and he remained in this post until February, 1940, when he was promoted to assistant freight traffic manager at Washington, the position he now leaves to become assistant to the vice-president with headquarters at Columbia.

A. X. Williams has been appointed assistant to the vice-president of the Reading at Philadelphia, Pa.

FINANCIAL, LEGAL AND ACCOUNTING

Hobart H. Young, general freight agent of the Pennsylvania at Pittsburgh, Pa., has been named freight claim agent with system jurisdiction at Philadelphia, Pa., succeeding

Albert P. Hickcox, whose death is reported elsewhere in these columns. Mr. Young was born on June 11, 1900, at Denver, Colo., and saw service with the Signal Corps, United States Army, in the first World War. He entered the employ of the Pennsylvania on May 12, 1920, as a clerk at



Hobart H. Young

Jersey City, N. J. After serving in the station and traffic departments in the metropolitan New York district, he was appointed freight representative at New York in January, 1923, becoming assistant chief clerk to the division freight agent at that point in May of the same year. On January 16, 1926, he was appointed chief clerk to the division freight agent at Altoona, Pa., and on April 16, 1929, he became district freight agent at Philadelphia. On January 1, 1930, he was sent to New England and in June of the same year he was appointed New England freight agent, with headquarters at Boston, Mass. Mr. Young was promoted to assistant general freight agent at Philadelphia on October 16, 1936, and to general agent at Pittsburgh in June, 1943, remaining in that position until his recent appointment as freight claim agent.

Henry W. Oppenhimer, assistant general attorney of the Chesapeake & Ohio at Richmond, Va., has been appointed assistant general solicitor with the same headquarters.

John W. Giles has been appointed assistant general solicitor of the Chesapeake & Ohio, with headquarters at Cleveland, Ohio. He was formerly head of the legal department International Minerals & Chemical Corp.

OPERATING

Hubert C. Willis, division superintendent of the Atchison, Topeka & Santa Fe at Emporia, Kan., has been transferred to Fort Worth, Tex., succeeding **O. H. Osborn,** who has been granted a leave of absence to enter military service.

Frank Reynolds, assistant superintendent of the Fitchburg division of the Boston & Maine, has been named assistant superintendent of the Terminal division at Boston, Mass. **Roy Baker,** principal road foreman and general supervisor of air brakes and train control equipment, succeeds Mr. Reynolds as assistant superintendent of the Fitchburg division.

A. Mosby Harris, division engineer of the Columbus division of the Pennsylvania at Columbus, Ohio, has been advanced to superintendent of the Logansport division, with headquarters at Logansport, Ind., succeeding **Morton S. Smith,** whose promotion to superintendent of freight transportation at Chicago was reported in the *Railway Age* of October 21.

John W. Myers, special representative of the executive department of the Chicago, Rock Island & Pacific at Chicago, has been appointed acting superintendent of the Rock Island division, with headquarters at Rock Island, Ill., succeeding to the duties of **W. E. Heimerdinger,** whose appointment as acting assistant chief engineer, with headquarters at Chicago, is reported elsewhere in these columns.

Forrest E. Bailey, whose appointment as superintendent, Brownville division, New Brunswick district, of the Canadian Pacific at Brownville Junction, Me., was announced in the *Railway Age* of October 28, was born at Bath, N. H., on October 19, 1893, and



Forrest E. Bailey

entered railroading as an assistant agent of the Boston & Maine at Thetford, Vt., in 1912, after graduation from Thetford Academy. After working for the Boston & Maine as operator, agent, and train dispatcher, he was named general agent at St. Johnsbury, Vt., transferring to the Canadian Pacific when the Canadian Pacific leased a portion of the Boston & Maine road in June, 1926. He served as general agent at Newport, Vt., from September, 1939, to November, 1941, when he was appointed assistant superintendent of the Farnham division. He transferred to Brownville Junction on April 1, 1944, and remained in that post until his recent promotion to superintendent.

F. T. Mahoney, who has been on leave of absence from the Missouri Pacific to serve with the Office of Defense Transportation, has returned to his position of superintendent of the Kansas City Terminal division, with headquarters at Kansas City, Mo. **E. H. Campbell,** who has been serving as superintendent during Mr. Mahoney's absence, returns to his former position of trainmaster of the Kansas City Terminal division, succeeding **C. F. Morrison,** who has been assigned to other duties.

W. T. Stewart, trainmaster of the Chicago, Milwaukee, St. Paul & Pacific at Ottumwa, Iowa, has been promoted to assistant superintendent of the Kansas City terminals, with headquarters at Coburg, Mo., succeeding **E. O. Eckert,** who has been appointed acting superintendent of the Kansas City division, with headquarters at Ottumwa. Mr. Eckert assumes the duties of **Walter C. Givens,** whose death on November 3 is reported elsewhere in these columns.

TRAFFIC

G. R. Pettit, division passenger agent of the Southern with headquarters at Jacksonville, Fla., will retire from service on December 1, after more than 47 years service.

W. McCrackan, general agent of the Wabash at Philadelphia, Pa., has been appointed eastern traffic manager at New York, succeeding Larry C. Bostwick, whose death was reported in the *Railway Age* of November 4. **A. S. Birchett,** general agent, freight department, at Milwaukee, Wis., has been named to replace Mr. McCrackan as general agent at Philadelphia.

John C. McMichael, assistant general freight agent of the Pennsylvania at Pittsburgh, Pa., has been promoted to general freight agent, with headquarters at Chicago, succeeding **William C. Sommers,** who has been transferred to Pittsburgh. **W. P. Stuart,** New England freight agent, with headquarters at Boston, Mass., has been advanced to assistant general freight agent at Pittsburgh, replacing Mr. McMichael.

Ray Clark, assistant general freight agent of the Grand Trunk Western, has been promoted to general freight agent, with headquarters as before at Chicago. **J. M. Parramore,** dairy traffic manager at Chicago, has been appointed assistant general freight agent, with the same headquarters, succeeding Mr. Clark. Mr. Parramore will also continue as dairy traffic manager.

William H. Dana, a member of the Standing Rate Committee of the Trans-Continental Freight Bureau, has been appointed chairman of the Western Traffic Executive Committee and of the Western Trunk Line Committee, with headquarters at Chicago, succeeding **Joseph A. Farmar,** whose death on September 29 was reported in the *Railway Age* of October 7. Mr. Dana entered railway service in 1906 with the freight traffic department of the Union Pacific, holding various positions until 1932 when he went with the Trans-Continental Freight Bureau, taking the position he held at the time of his new appointment.

S. S. McKinlay, whose promotion to coal freight agent of the Baltimore & Ohio, with headquarters at Chicago, was reported in the *Railway Age* of November 11, was born in Scotland on September 11, 1899. He entered railway service on November 1, 1922, with the Buffalo, Rochester & Pittsburgh (now part of the B. & O.) at Rochester, N. Y. In February, 1934, he was appointed secretary to the coal freight agent

News Department continued on second left-hand page

Let's get *down to earth*

on train communication



Dependable voice communication

"Union" I.T.C. (Inductive Train Communication) system provides dependable, practicable two-way voice communication between vehicles of a train, between trains, and between trains and wayside points.

It is the only train communication system designed exclusively for railroad use, by men who know railroad needs, and proved through years of regular railroad service.



Proved in regular railroad service

When you're considering train communication systems, keep this fact in mind—*"Union" I.T.C. is the only system that has been thoroughly proved through years of regular railroad use in yards and in road service.*

Here's the record:

Bessemer & Lake Erie R.R. Co.	Road	(Albion, Pa. to Pittsburgh)
Cleveland, Cincinnati, Chicago & St. Louis Ry.	Yard	(Sharonville, Ohio)
Chicago, Burlington & Quincy R.R. Co.	Yard	(Two Yards—Galesburg, Ill.)
Chicago, Burlington & Quincy R.R. Co.	Yard	(Lincoln, Neb.)
Great Northern Ry. Co.	Yard	(Allouez, Wis.)
Louisville & Nashville R.R. Co.	Yard	(DeCoursey, Ky.)
Norfolk & Western Ry. Co.	Yard	(Roanoke, Va.)
The Pennsylvania R.R.	Yard	(Two Yards—Altoona, Pa.)
The Pennsylvania R.R.	Yard	(Columbus, Ohio)
The Pennsylvania R.R.	Yard	(Two Yards—Harrisburg, Pa.)
The Pennsylvania R.R.	Yard	(Indianapolis, Ind.)
The Pennsylvania R.R.	Yard	(Pitcairn, Pa.)
The Pennsylvania R.R.	Yard	(Strip District—Pittsburgh, Pa.)
The Pennsylvania R.R.	Road	(Pittsburgh, Pa. to Harrisburg Under Construction)
The Pennsylvania R.R.	Road	(Trenton, N.J. to Phillipsburg)
Terminal R.R. Association of St. Louis	Yard	(East St. Louis, Ill.)

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UNION SWITCH & SIGNAL COMPANY

SWISSVALE, PA.

NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO



of the B. & O., with headquarters at Pittsburgh, Pa., and two years later he was advanced to secretary to the general coal freight agent, with the same headquarters. In 1939 Mr. McKinlay was promoted to coal traffic representative, also at Pittsburgh, the position he held at the time of his new appointment, effective November 1.

Warren W. Brown, whose promotion to general freight agent of the New York, Chicago & St. Louis, with headquarters at St. Louis, Mo., was reported in the *Railway Age* of October 28, was born at Chicago on June 8, 1899, and entered railway service on January 2, 1923, as a freight representative at Chicago. In December, 1927, he was promoted to general agent, with headquarters at Omaha, Neb., and on April 15, 1931, he was transferred to Pittsburgh, Pa. On September 15, 1941, Mr. Brown was advanced to assistant general freight agent, with headquarters at Chicago, holding that position until his new appointment.



Warren W. Brown

Willoughby F. Richardson, whose retirement as freight traffic manager of the Baltimore & Ohio at New York was announced in the *Railway Age* of November 11, was born at Cambridge, Mass., on May 22, 1870. He entered railroad service in 1887 with the Fitchburg Fast Freight Lines (now the Boston & Maine) at Boston, Mass., shortly thereafter joining the Chicago, Rock Island & Pacific at Boston. After serving in various positions, including that of New England traveling freight agent, Mr. Richardson joined the Baltimore & Ohio in 1897 as soliciting agent at Boston. He was named New England commercial freight agent there in 1907, and then became assistant general freight agent at Philadelphia, Pa., in December, 1916. In March, 1920, he was advanced to general freight agent at Baltimore, Md., and one year later he was named assistant freight traffic manager at New York. In June, 1922, he was promoted to freight traffic manager, the position from which he now retires.

ENGINEERING & SIGNALING

W. E. Heimerdinger, superintendent of the Rock Island division of the Chicago, Rock Island & Pacific at Rock Island, Ill., has been appointed acting assistant chief engineer, with headquarters at Chicago, a newly-created position.

MECHANICAL

E. J. Crawford, master mechanic of the Chicago & North Western at Clinton, Iowa, has been advanced to superintendent of motive power, Western district, with headquarters at Chicago, succeeding **J. C. Stump,** who has been transferred to the Northern district, with headquarters also at Chicago, where he replaces **O. J. Protz,** whose promotion to superintendent of motive power and machinery of the Chicago, St. Paul, Minneapolis & Omaha (part of the North Western System), was reported in the *Railway Age* of November 11. **F. L. Baker,** assistant master mechanic at South Pekin, Ill., has been promoted to master mechanic, with headquarters at Chadron, Neb., relieving **H. P. Cox,** who has been transferred to Clinton, succeeding Mr. Crawford.

PURCHASES AND STORES

William G. Mateer, whose promotion to purchasing agent of the Elgin, Joliet & Eastern, with headquarters at Chicago, was reported in the *Railway Age of* October 21, was born at Eldorado, Kan., on October 26, 1890, and entered railway service with the E. J. & E. in 1908, as a clerk of the maintenance of way department. One year later he was appointed a rodman, later serving as an instrumentman. In 1912 he was advanced to cost clerk on construction and survey. In 1913 he was promoted to road accountant on construction and maintenance and five years later he was granted a leave of absence to enter the armed forces. In 1919 Mr. Mateer returned to the E. J. & E. as a supervisory clerk of the valuation department, with headquarters at Chicago, and in 1923 he was advanced to special cost accountant on grade separations, with the same headquarters, later becoming valuation accountant in charge of valuation reports. In January, 1927, Mr. Mateer was promoted to engineering accountant and in November, 1936, he was advanced to chief clerk to the chief engineer, the position he held at the time of his new appointment.



William G. Mateer

OBITUARY

Anthony Bonn, special accountant of the Baltimore & Ohio, died at Baltimore, Md., on October 19. He was 69 years old.

Thomas Hart Pindell, who resigned as president of the Alton & Southern in 1938, died in a hospital in Springfield, Ill., on November 9. He was 86 years old.

Edward A. Pyles, assistant engineer of buildings of the Baltimore & Ohio at Baltimore, Md., died November 6. He was 53 years old. Mr. Pyles entered the engineering department of the Baltimore & Ohio in 1916 as a draftsman in the office of the chief engineer and was named chief draftsman on June 1, 1916. He became assistant engineer of buildings on October 1, 1942.

Walter C. Givens, superintendent of the Kansas City division of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Ottumwa, Iowa, died in a Sioux City (Iowa) hospital on November 3. Mr. Givens was born on December 14, 1890, and entered railway service in January, 1912, as a telegraph operator of the Milwaukee and later serving in this capacity at various points of the road. He held several minor positions until 1926 when he was advanced to trainmaster, with headquarters at Ottumwa, and on May 16, 1930, he was promoted to assistant superintendent of the Chicago Terminal. On June 16, 1931, Mr. Givens was advanced to superintendent of the Kansas City division at Ottumwa, later being transferred to Marion, Iowa, and Savanna, Ill. In 1942 he was granted a leave of absence but in the same year he returned to the Milwaukee as a dispatcher at Sioux City, Iowa, and in 1943 he was promoted to the position he held at the time of his death.

Albert P. Hickcox, freight claim agent of the Pennsylvania at Philadelphia, Pa., died on October 24. Mr. Hickcox was born at California, Mo., on August 14, 1880, and attended State Normal School at Warrensburg, Mo. He entered railroad service on October 15, 1901, in the Fort Wayne, Ind., freight office of the Pennsylvania, and after holding various clerical positions he was named assistant timekeeper, office of the division superintendent, at Fort Wayne in May, 1904. The following year he became claim clerk of the Vandalia (part of the Pennsylvania), and he served as assistant chief claim clerk from 1907 to 1912 when he was promoted to chief claim clerk. In January, 1917, he was appointed chief claim clerk, office of freight claim agents, Pennsylvania Lines West of Pittsburgh, at Pittsburgh, Pa.; and in March, 1920, he was advanced to freight claim agent of the Pennsylvania System at St. Louis, Mo. After serving briefly as district freight claim agent at New York, Mr. Hickcox was named assistant freight claim agent at Philadelphia in October, 1925, and he remained in this position until May, 1939, when he became freight claim agent there, the position he held at the time of his death.

Operating Revenues and Operating Expenses of Class I Steam Railways

(Switching and Terminal Companies Not Included)

FOR THE MONTH OF SEPTEMBER, 1944 AND 1943

Item	United States		Eastern District		Southern District		Western District	
	1944	1943	1944	1943	1944	1943	1944	1943
Miles of road operated at close of month	228,551	229,050	56,064	56,218	43,352	43,420	129,135	129,412
Revenues:								
Freight	$591,103,907	$576,044,639	$218,694,465	$223,711,580	$107,472,941	$105,443,511	$264,936,501	$246,889,548
Passenger	152,970,816	146,725,874	63,905,793	59,127,112	29,196,229	29,216,954	59,868,794	58,381,808
Mail	10,408,040	10,069,840	3,589,682	3,436,609	1,853,281	1,861,643	4,965,077	4,771,588
Express	11,267,757	11,051,509	3,631,632	4,303,076	1,538,784	1,154,926	6,097,341	5,593,507
All other operating revenues	33,478,462	32,595,468	14,340,588	14,144,615	4,724,345	4,249,559	14,413,529	14,201,294
Railway operating revenues‡	799,228,982	776,487,330	304,162,160	304,722,992	144,785,580	141,926,593	350,281,242	329,837,745
Expenses:								
Maintenance of way and structures	110,404,690	95,350,794	42,172,256	37,677,435	19,402,273	15,591,992	48,830,161	42,081,367
Depreciation	9,252,430	8,744,841	4,224,054	3,738,225	1,453,788	1,468,304	3,574,588	3,538,312
Retirements	1,323,741	378,569	369,273	94,810	249,931	23,753	704,537	260,006
Deferred maintenance	* 300,831	383,468	* 23,407	67,614	..... *	12,751	* 277,424	328,605
Amortization of defense projects	1,761,259	1,002,799	598,545	377,363	309,985	190,046	852,729	435,390
Equalization	* 823,950	* 1,948,629	* 1,533,890	* 1,399,469	934,239	235,941	* 224,299	* 785,101
All other	99,192,041	86,789,746	38,537,681	34,798,892	16,454,330	13,686,699	44,200,030	38,304,155
Maintenance of equipment	131,786,284	120,478,875	54,704,392	50,869,723	25,043,074	22,631,861	52,038,818	46,977,291
Depreciation	17,902,439	17,725,609	7,520,392	7,554,473	3,602,834	3,609,711	6,779,213	6,561,425
Retirements	* 3,851	.....	3,279	..... *	317	..... *	6,813	.....
Deferred maintenance and major repairs	* 37,653	221,672	655	5,334	..... *	4,364	* 38,308	220,702
Amortization of defense projects	14,856,321	10,757,901	4,890,692	3,588,623	3,715,733	2,700,564	6,249,896	4,468,714
Equalization	19,258	34,117 *	35,360	6,430	26,061 *	15,953	28,557	43,640
All other	99,049,270	91,739,576	42,324,734	39,714,863	17,698,763	16,341,903	39,026,273	35,682,810
Traffic	10,838,591	11,324,446	4,088,670	4,023,048	2,095,678	2,063,097	4,654,243	5,238,301
Transportation—Rail line	241,719,692	226,683,912	105,860,189	102,107,893	40,803,004	36,610,733	95,056,499	87,965,286
Transportation—Water line	120	675	.....	.....	.....	.....	120	675
Miscellaneous operations	9,854,861	9,017,011	3,550,261	3,305,677	1,592,316	1,387,875	4,712,284	4,323,459
General	16,659,809	15,130,514	6,842,345	6,125,940	3,236,322	2,979,032	6,581,142	6,025,542
Railway operating expenses	521,264,047	477,986,227	217,218,113	204,109,716	92,172,667	81,264,590	211,873,267	192,611,921
Net revenue from railway operations	277,964,935	298,501,103	86,944,047	100,613,276	52,612,913	60,662,003	138,407,975	137,225,824
Railway tax accruals	169,620,826	172,884,544	53,022,924	55,237,523	34,498,759	39,065,347	82,099,143	78,581,674
Pay-roll taxes	19,137,884	17,833,825	8,070,280	7,811,169	3,270,774	2,921,228	7,796,830	7,101,428
Federal income taxes†	120,597,508	127,846,733	28,929,439	35,637,243	26,378,918	30,764,960	65,289,151	61,444,530
All other taxes	29,885,434	27,203,986	16,023,205	11,789,111	4,849,067	5,379,159	9,013,162	10,035,716
Railway operating income	108,344,109	125,616,559	33,921,123	45,375,753	18,114,154	21,596,656	56,308,832	58,644,150
Equipment rents—Dr. balance	13,339,405	12,059,454	4,992,335	5,134,030 *	53,886 *	157,801	8,400,956 *	7,083,225
Joint facility rent—Dr. balance	5,878,244	3,298,136	2,517,320	1,679,027	401,379	369,631	2,959,545	1,249,478
Net railway operating income	89,126,460	110,258,969	26,411,468	38,562,696	17,766,661	21,384,826	44,948,331	50,311,447
Ratio of expenses to revenues (per cent)	65.2	61.6	71.4	67.0	63.7	57.3	60.5	58.4

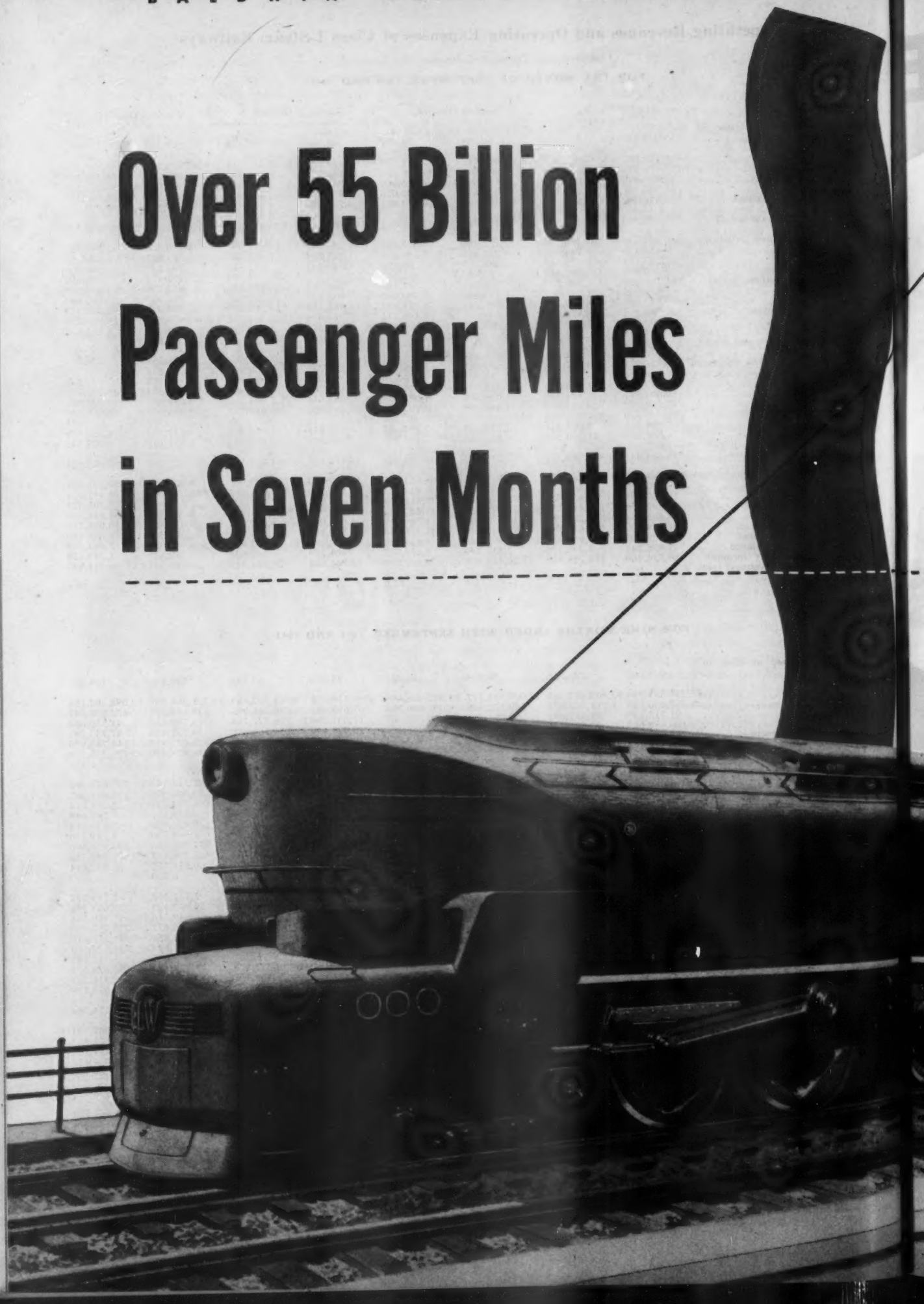
FOR NINE MONTHS ENDED WITH SEPTEMBER, 1944 AND 1943

Item								
Miles of road operated at close of month	228,661	229,138	56,094	56,313	43,376	43,442	129,191	129,383
Revenues:								
Freight	$5,245,353,840	$5,049,643,265	$2,020,518,577	$1,982,668,598	$999,570,458	$968,592,469	$2,225,264,805	$2,098,382,198
Passenger	1,357,236,119	1,214,502,977	549,972,538	492,400,786	267,599,302	249,266,946	539,664,279	472,835,245
Mail	91,715,139	88,457,092	30,894,316	30,798,661	17,031,390	16,127,748	43,789,433	41,530,683
Express	106,658,663	93,526,441	35,121,771	32,288,347	15,999,442	13,504,812	55,537,450	47,733,282
All other operating revenues	279,558,413	268,009,764	120,359,201	118,083,864	38,576,759	35,181,980	120,622,453	114,743,920
Railway operating revenues‡	7,080,522,174	6,714,139,539	2,756,866,403	2,656,240,256	1,338,777,351	1,282,673,955	2,984,878,420	2,775,225,328
Expenses:								
Maintenance of way and structures	939,320,898	774,782,989	355,631,817	297,869,068	162,140,951	134,858,923	421,548,130	342,054,998
Depreciation	79,847,529	79,095,600	34,724,362	34,012,672	13,078,860	13,260,961	32,044,307	31,821,967
Retirements	11,310,072	3,202,509	3,709,735	720,681	1,377,079	267,074	6,223,258	2,214,754
Deferred maintenance	* 4,225,600	688,940	* 667,487	* 25,695	..... *	53,024	* 3,558,113	767,659
Amortization of defense projects	13,974,695	7,146,265	4,534,956	2,439,397	2,505,711	1,276,050	6,934,028	3,430,818
Equalization	7,061,056	12,183,929	375,047	3,178,563	3,841,479	5,264,026	2,844,530	3,741,340
All other	831,353,146	672,465,746	312,955,204	257,543,450	141,337,822	114,843,836	377,060,120	300,078,460
Maintenance of equipment	1,185,025,569	1,029,401,053	497,181,538	438,922,041	222,247,374	193,388,653	465,596,657	397,090,359
Depreciation	160,314,579	157,846,873	67,591,760	67,073,104	32,167,040	32,341,675	60,555,779	58,432,094
Retirements	* 9,748	.....	3,872	..... *	5,290	..... *	8,330	.....
Deferred maintenance and major repairs	* 1,113,181	1,153,970	14,127	16,002	..... *	51,278	* 1,127,308	1,189,246
Amortization of defense projects	123,612,681	93,590,140	40,858,238	32,524,238	31,804,320	22,004,316	50,950,123	39,061,586
Equalization	94,396	862,902	22,567	399,015	22,113	344,344	49,716	119,543
All other	902,126,842	775,947,168	388,690,974	338,909,682	158,259,191	138,749,596	355,176,677	298,287,890
Traffic	100,576,363	93,781,120	36,285,406	34,173,987	18,173,503	18,049,523	46,117,454	41,557,610
Transportation—Rail line	2,198,993,127	1,935,593,864	978,557,210	871,614,195	372,288,413	328,651,100	848,147,504	735,328,569
Transportation—Water line	5,025	12,885	.....	.....	.....	.....	5,025	12,885
Miscellaneous operations	88,965,093	76,826,974	31,639,599	27,716,523	14,547,321	12,432,378	42,778,173	36,678,073
General	149,701,427	131,852,638	60,402,821	53,362,291	28,827,122	26,159,102	60,471,484	52,331,245
Railway operating expenses	4,662,587,502	4,042,251,523	1,959,698,391	1,723,658,105	818,224,684	713,539,679	1,884,664,427	1,605,053,739
Net revenue from railway operations	2,417,934,672	2,671,888,016	797,168,012	932,582,151	520,552,667	569,134,276	1,100,213,993	1,170,171,589
Railway tax accruals	1,419,213,781	1,445,072,858	419,890,252	471,683,659	332,403,573	347,121,806	666,919,956	626,267,393
Pay-roll taxes	173,329,792	149,954,851	73,078,817	64,122,677	30,131,185	26,056,341	70,119,790	59,775,833
Federal income taxes†	1,016,242,323	1,066,306,883	247,210,110	308,320,094	256,584,989	275,529,686	512,447,224	482,457,103
All other taxes	229,641,666	228,811,124	99,601,325	99,240,888	45,687,399	45,535,779	84,352,942	84,034,457
Railway operating income	998,720,891	1,226,815,158	377,277,760	460,898,492	188,149,094	222,012,470	433,294,037	543,904,196
Equipment rents—Dr. balance	116,128,584	113,601,944	50,996,578	46,979,650	4,956,857	7,325,569	60,175,149	59,296,725
Joint facility rent—Dr. balance	34,707,783	30,657,075	16,393,474	15,507,866	3,811,608	3,704,681	14,502,701	11,444,528
Net railway operating income	847,884,524	1,082,556,139	309,887,708	398,410,976	179,380,629	210,982,220	358,616,187	473,162,943
Ratio of expenses to revenues (per cent)	65.9	60.2	71.1	64.9	61.1	55.6	63.1	57.8

* Decrease, deficit, or other reverse items.
† Includes income tax, surtax, and excess-profits tax.
‡ Railway operating revenues are after deduction of $34,793,810 for the nine months ended with September 1944, and $20,601,232 for the nine months ended with September 1943 to create a reserve for land grant deductions in dispute.

Compiled by the Bureau of Transport Economics and Statistics, Interstate Commerce Commission. Subject to revision.

Over 55 Billion Passenger Miles in Seven Months



WHICH THE RAILROADS HELPED TO BUILD

and **BALDWIN** locomotives did their share . . .

Passenger traffic for the first seven months of 1944 was the highest for any like period in history, reaching the staggering total of 55,742,946,761 passenger-miles. This represents an increase of 16 per cent over the first seven months of 1943.

While these passenger trains were moving over the rails, freight traffic, too, was breaking all previous records—an indication of the fine accomplishments of the American railroads.

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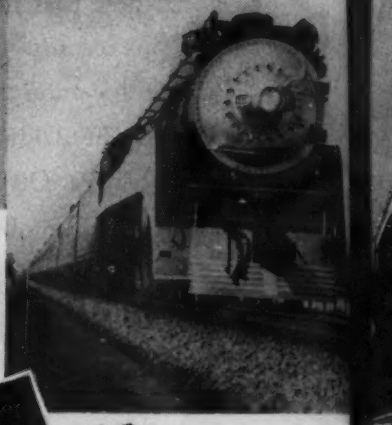
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INCREASE

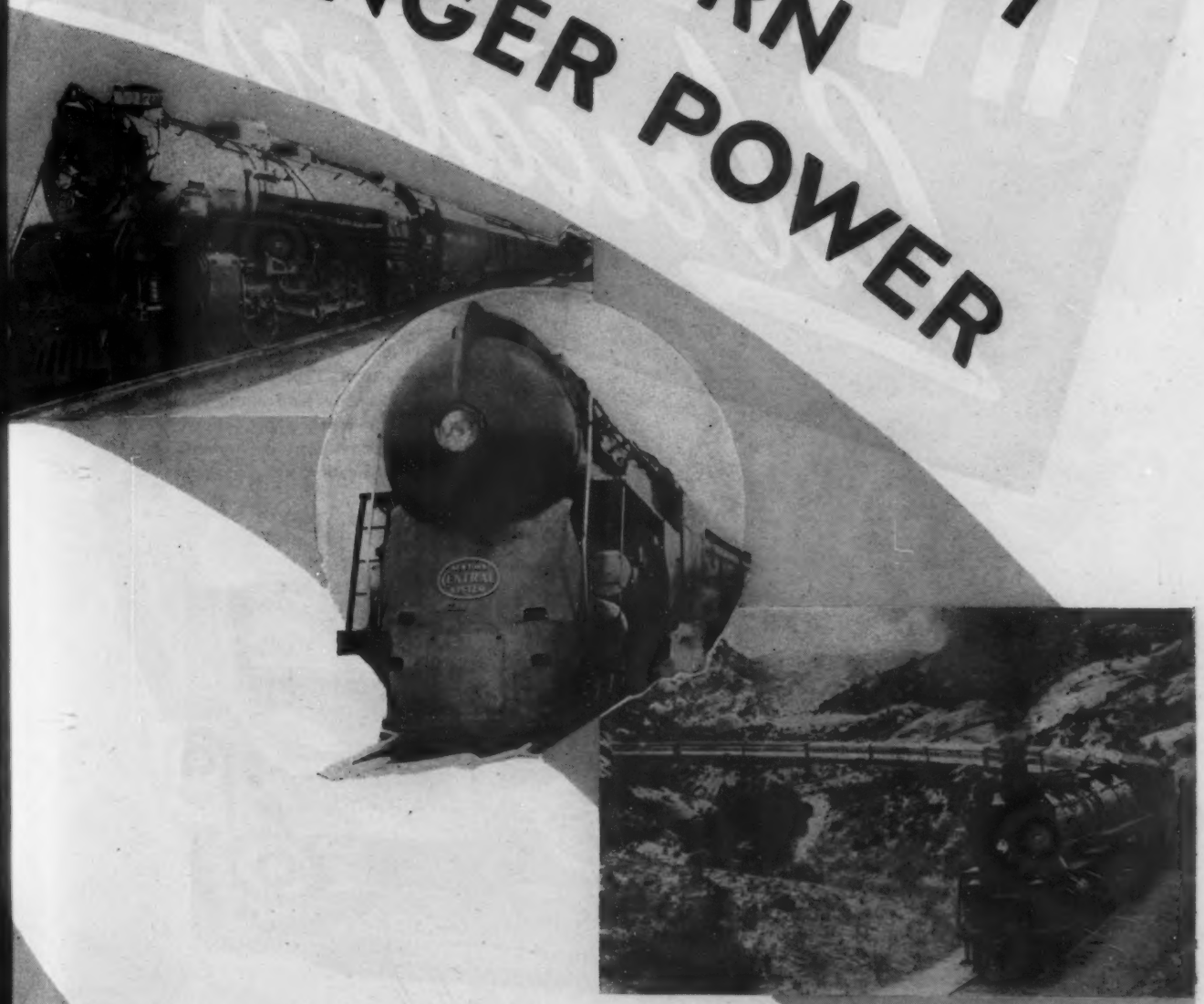




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THE AVAILABILITY OF MODERN PASSENGER POWER

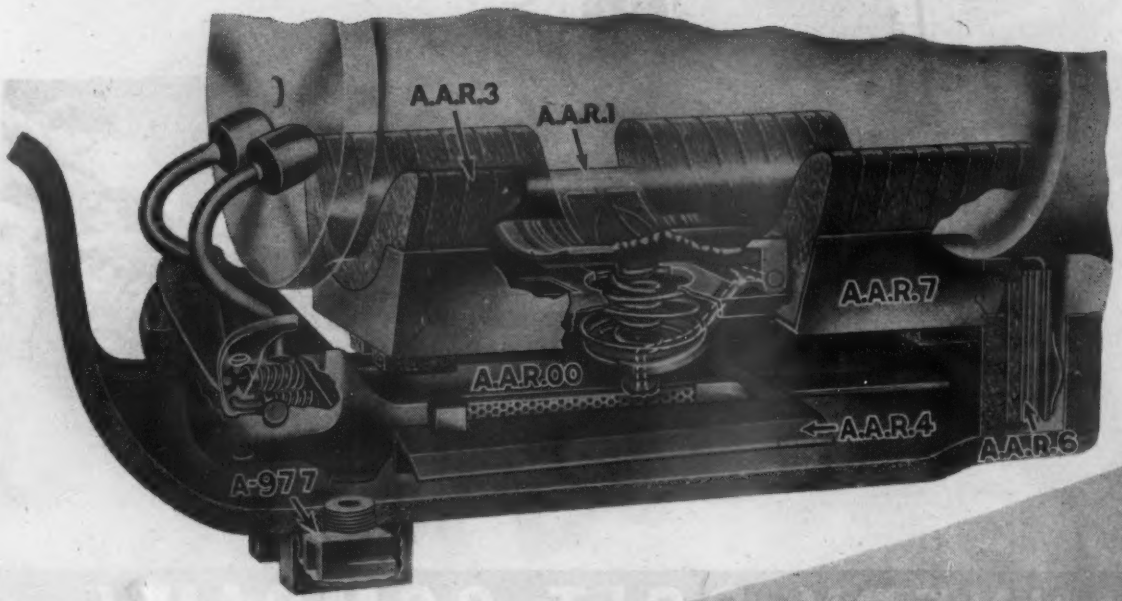


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Lubricators

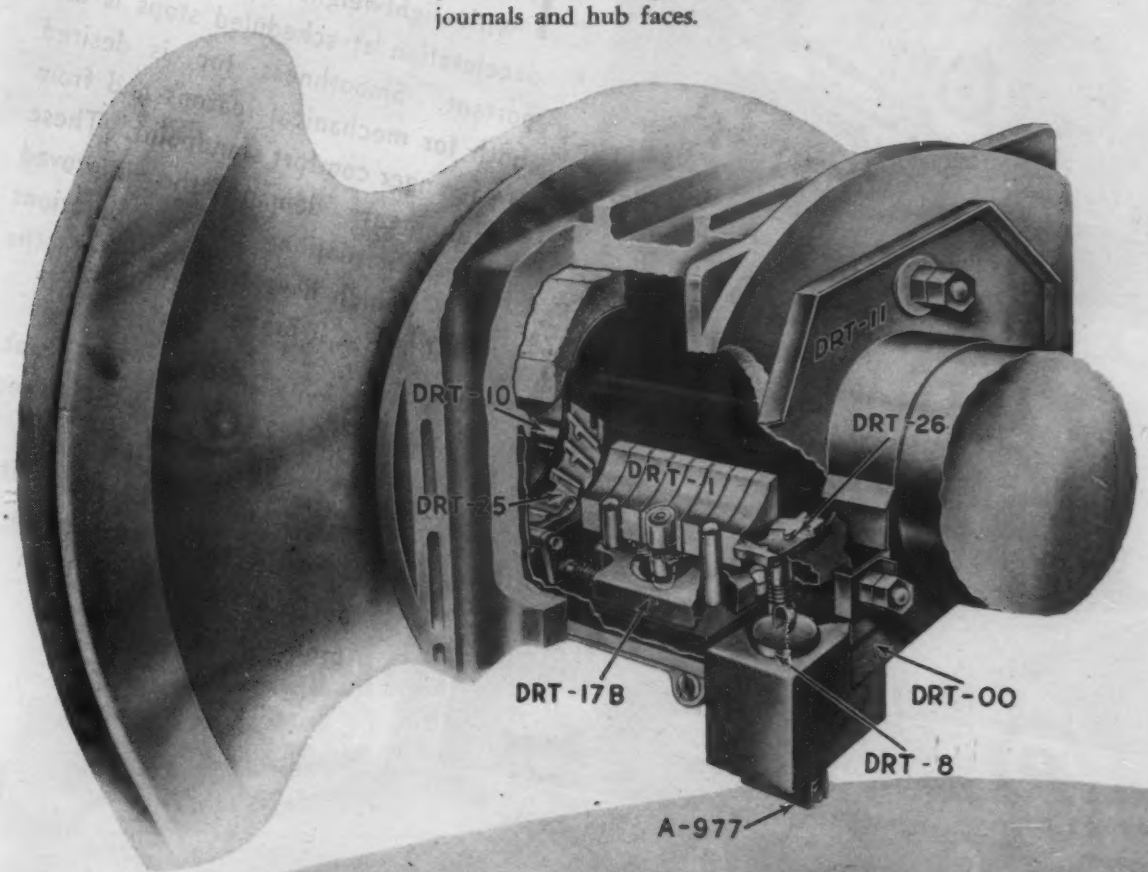
Hennessy A.A.R. Type Lubricators are now in use in tender and passenger car journal boxes on five railroads, providing dependable oil bath lubrication.



HENNESSY LUBRICATOR

COVER THE FIELD...

Hennessy Lubricator, type DRT, is the same as type DR, adapted to lead truck inside journals. It permits the use of heavier oil delivered in greater quantity without additional loss of lubricant and provides more dependable lubrication to these journals and hub faces.



HENNESSY LUBRICATOR

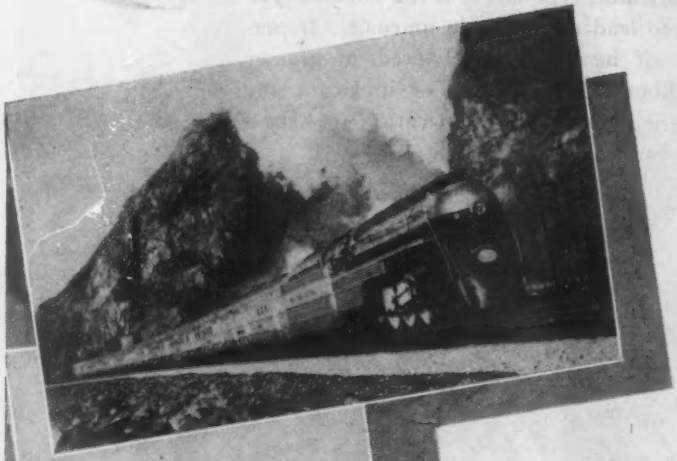
CO., INC.

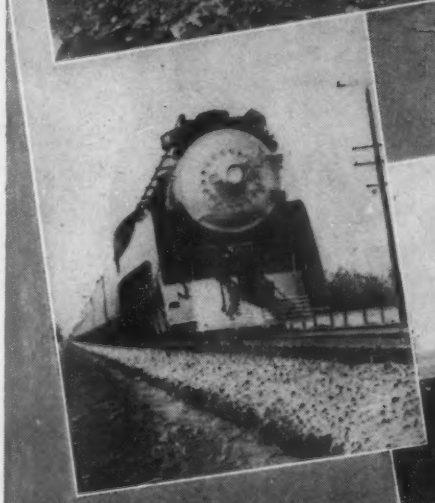
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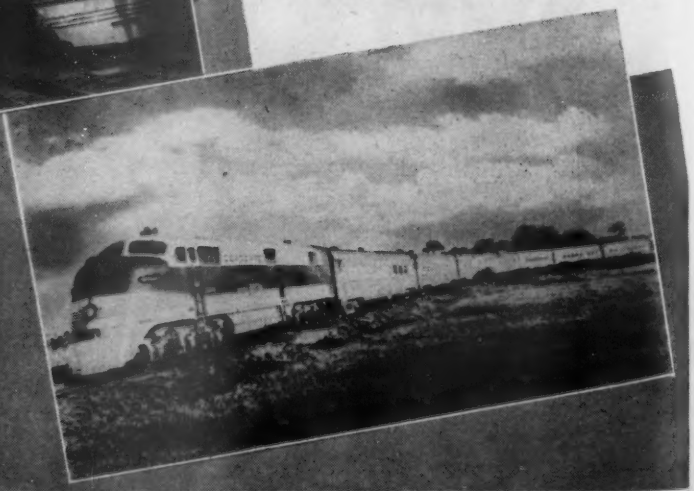






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You will find the "HSC" brake on many of the newer high speed passenger trains today; its proven advantages make it a logical part of your plans for post-war passenger train improvements.



"HSC" BRAKE

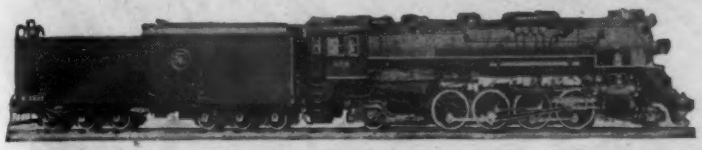
The New York Air Brake Company

420 Lexington Ave., New York City. Plant: Watertown, New York



Detroit, Toledo and Ironton No. 808
Built by Lima Locomotive Works in 1944

Atchison, Topeka and Santa Fe No. 2919
Built by Baldwin Locomotive Works in 1944





Northern Pacific No. 5148
Built by American Locomotive Company in 1944

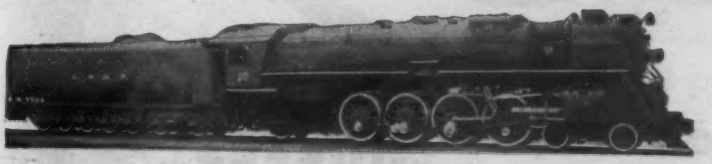
Chesapeake and Ohio No. 1625
Built by Lima Locomotive Works in 1944





Lehigh and Hudson River No. 10
Built by Baldwin Locomotive Works in 1944

Chicago, Rock Island and Pacific No. 5100
Built by American Locomotive Company in 1944



In Feedwater Heating

WORTHINGTON'S 8 PLUSES ADD UP TO 90% APPLICATIONS

+ 12% fuel saving
+ 13% increase in boiler capacity
+ 14% water saving
+ Increased draw-bar power
+ Fewer stops for water and fuel
+ Less boiler maintenance
+ Removal of 80% to 90% of corrosive oxygen from feedwater
+ Reduction of boiler scale accumulation

Superiorities like these account for the overwhelming choice in favor of Worthington's OPEN TYPE Feedwater Heaters. 90% of all recent orders for locomotives, including the orders for the six pictured on this page, specified Worthington.

For descriptive literature and data on power saving results in new as well as modernized locomotives, write today to — *Worthington Pump and Machinery Corporation, Harrison, New Jersey.*

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OPEN TYPE LOCOMOTIVE FEEDWATER HEATERS



Ready to roll up new records—
STANDARD *rolled steel* WHEELS

BALDWIN
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Hydraulic presses, Testing equipment, Steel forgings and castings, Diesel-electric locomotives, Diesel engines, Metal plate fabrication, Rolled steel rings, Bronze castings, Heavy machine work, Crane wheels, Bending rolls, Plate planers, Babbitt metal, Alloy iron castings, Briquetting presses.

Standard Rolled Steel Wheels get off to a running start in quality and service life—for they are produced in a plant that was doing business at the same location when the first railroad appeared in America.

All through the century of railroad development, Standard has been a trusted supplier. Many of the rolling practices that are now universal in the industry were pioneered here. In wheels, as in other important forgings and castings, one of the surest ways to be certain of satisfaction is to "Standardize on Standard." The Baldwin Locomotive Works, Standard Steel Works Division, Burnham, Pennsylvania, U.S.A. Offices: Philadelphia, New York, Chicago, Washington, Boston, Cleveland, St. Louis, San Francisco, Houston, Pittsburgh.

ARMY E NAVY

BLW THE BALDWIN GROUP

BALDWIN
STANDARD
STEEL FORGINGS & CASTINGS



★

MULTI-VENT

draftless ventilation

provides the efficient air distribution required for passenger comfort in modern equipment, and is readily adaptable to any type of car construction. In these typical installations note that the observation lounge and the streamline coach have fluorescent continuous lighting in the center of the ceiling, and the standard coach has incandescent fixtures in the center of the panels. Standard Multi-Vent panels are used in all types of cars and with any lighting equipment desired. Special panels can be furnished, as in the rounded end of the observation lounge car illustrated.

Are you familiar with all the advantages of Multi-Vent? Complete information will be sent upon request.

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1334-58 North Kostner Ave.
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Offices: New York • Baltimore • Pittsburgh
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Export Department:
International Railway Supply Co., New York

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94 to 97.7 percent AVAILABILITY

AVAILABILITY of the Whitcomb 44-ton diesel electric locomotive ranges between 94 to 97.7 percent. These powerful, economical switching locomotives are always on the go switching and spotting cars on branch and spur tracks in terminals, yards, ordnance depots, steel mills, cement mills—or, in other words, handling any possible job from light switching to transfer runs of several miles.

Designed and engineered by craftsmen thoroughly acquainted with railway supply and maintenance problems, Whitcomb locomotives are ruggedly constructed and have easy access for inspection and maintenance.

Today, when wartime schedules demand fast switching of freight and passenger cars, Whitcomb engines can be counted on 168 hours a week.

The complete Whitcomb line includes:

Diesel and Gasoline Locomotives: mechanical or hydraulic transmission locomotives weighing up to 40 tons, electrical transmission up to 80 tons.

Electric Locomotives: storage battery locomotives 1¾ tons to 12 tons in weight.

THE BALDWIN GROUP

THE WHITCOMB LOCOMOTIVE CO.

Subsidiary of ROCHELLE, ILL. THE BALDWIN LOCOMOTIVE WORKS





THE INSULATION IS
WOVENSTONE

THE PASSENGER IS COMFORTABLE

Wovenstone provides permanent protection for steam lines from the ravages of weather—maintains highest possible temperatures from the locomotive back to the last car of the longest trains. Wovenstone will not loosen, sag or shake down—remains firm and snug against the pipe at all times. Can be removed and reapplied without loss of original efficiency.

UNION ASBESTOS
MEANS PROGRESS IN INSULATION
AND RUBBER CO.

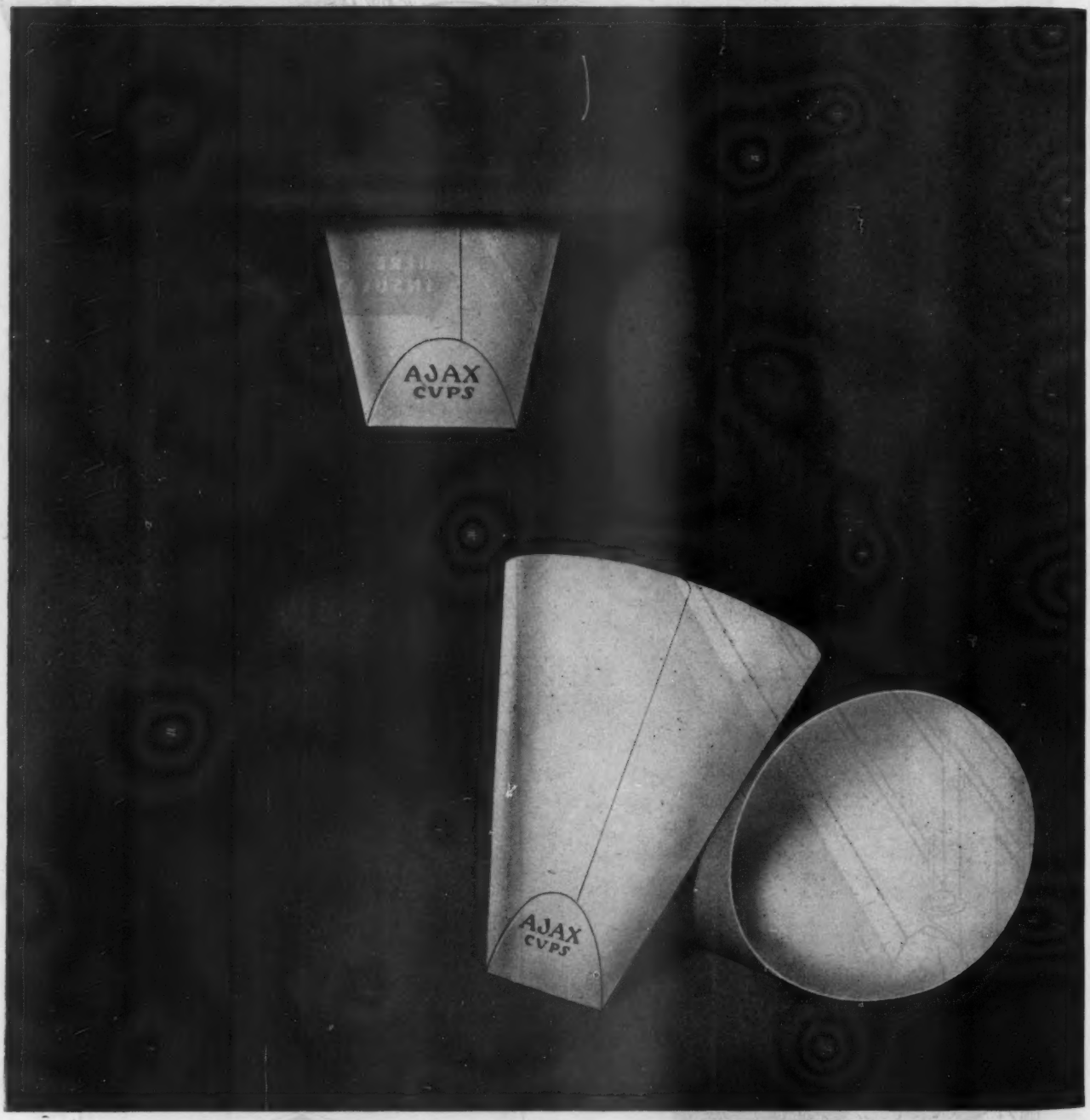
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Plan with practical, economical AJAX CUPS

Ajax Drinking Cup Service starts with *planning* by our engineers, who can work out efficient and attractive drinking cup dispensers to meet any condition of railway car design and construction.

You can be sure of the utmost in economical, space-saving, streamlined drinking cup service, if you call in Ajax engineers to help you plan these facilities at the start.

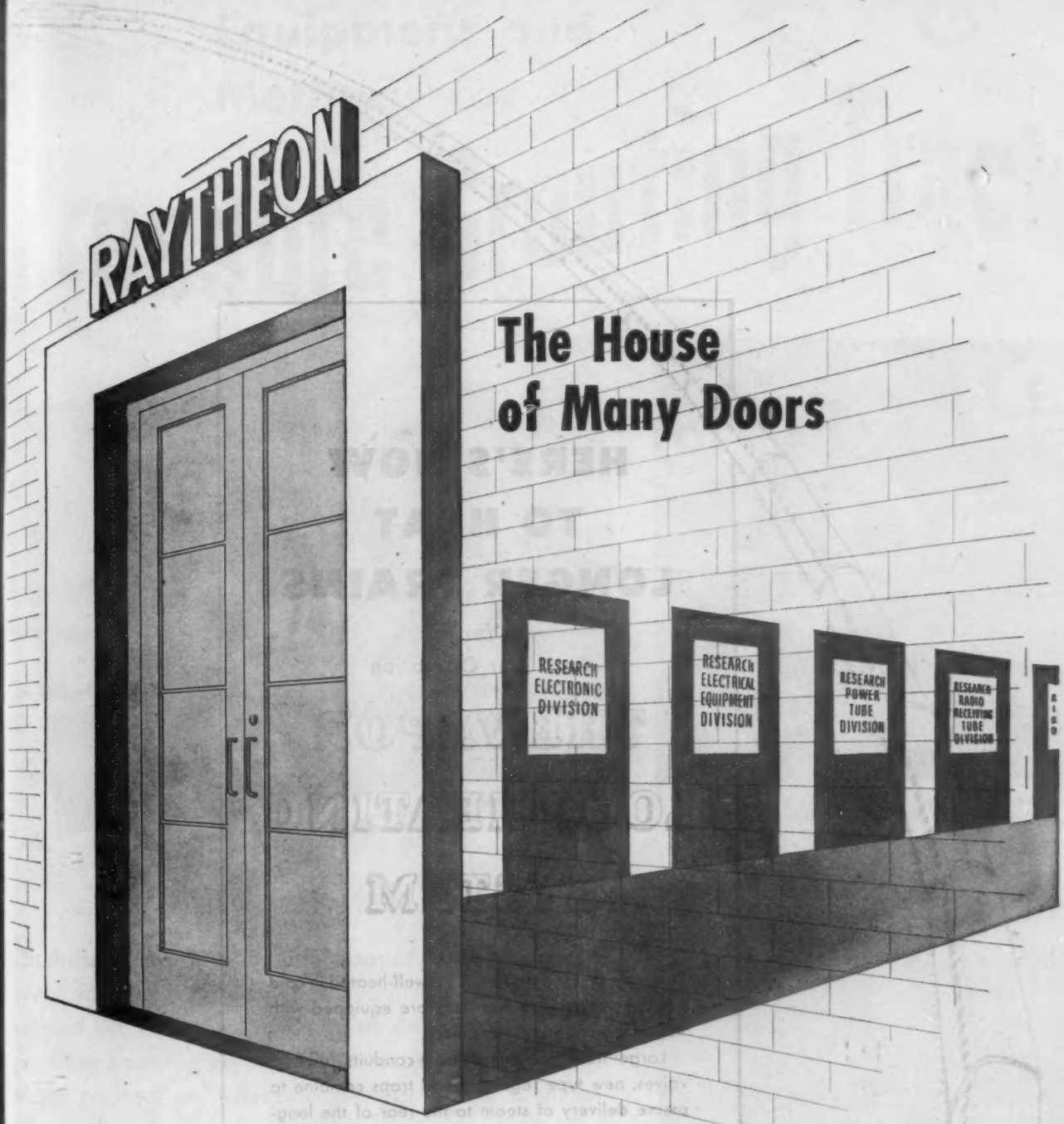


LOGAN DRINKING CUP CO. Division
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PACIFIC COAST ENVELOPE CO. Division
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Divisions of United States Envelope Company

AJAX *Paper Drinking Cups*



The House of Many Doors

RAYTHEON is truly a house of many doors . . . doors that lead to many research, engineering, and production groups which have made great contributions to the quality and quantity of electronic equipment and receiving and transmitting tubes now helping the armed forces.

Today, behind these closed doors over 16,000 men and women are devoted to war work. Tomorrow, these doors will be wide open and through them will come new developments in all phases of electronics.

Tune in the Raytheon radio program: "MEET YOUR NAVY," every Saturday night on the Blue Network. Consult your local newspaper for time and station.

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Devoted to research and manufacture of complete electronic equipment; receiving, transmitting and hearing aid tubes; transformers; and voltage stabilizers.



HERE'S HOW TO HEAT LONGER TRAINS

for

Post War Operation

THE VAPOR LOOP HEATING SYSTEM

Rear cars on long trains will be well-heated in cold weather where post war cars are equipped with Vapor loop heating equipment.

Larger trainlines, smooth bore conduits, full flow valves, new type regulator and traps combine to assure delivery of steam to the rear of the longest trains. This insures proper temperatures and comfortable passengers in observation cars of the longest post war trains.

Steam saving (approximating 20 per cent) is accomplished by elimination of steam waste with Vapor equipment. Ask for Bulletin 1022.

VAPOR CAR HEATING CO., INC.

RAILWAY EXCHANGE BLDG. CHICAGO 90, ILLINOIS

BE SURE IT'S GENUINE VAPOR ENGINEERED
VAPOR SYSTEM
GUARANTEED EFFICIENCY

Equipment and Methods for

Pressure Grouting Track



Equipment, including small tilting mixer, grout trough and pipes discharging into commercial pneumatic grout unit on Chicago, Burlington & Quincy Railroad at Salem, Neb.



Injection points in place on Wabash Railroad at Thurman, Ind. Grout hose is attached to point in foreground.

Stabilizing roadbeds by injections of portland cement grout has passed the experimental stage. Years of service on major railroads have demonstrated that pressure grouting gives positive results in eliminating water pockets and effects consistent saving in maintenance.

Equipment and methods to insure satisfactory pressure grouting have been developed by the railroads and equipment manufacturers. Work is done by regular railroad gangs with no interruption of war traffic.

Write for illustrated information sheet, "Stabilizing Railroad Track by Pressure Grouting." Mailed free in United States and Canada.



Grout being injected through pipe in foreground, travels under tie bed and blows out through uncapped injection point six feet away. Operation is on Baltimore & Ohio Railroad at Niles Junction, Ohio.

PORTLAND CEMENT ASSOCIATION

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A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work

BUY MORE WAR BONDS



Here is a NEW Structural Product

INDERON

A High-Strength Material, in Large Panel Form, With a Smooth, Hard, Infrangibly-United Plastic Surface!

INDERON was developed as a utility container material for the Army Air Forces, was later adapted to many other war uses where strength, durability and dense, hard surface qualities were essential.

INDERON is waterproof, highly resistant to abrasion, impact, vapor permeation and other destructive forces. INDERON, made by chemically and infrangibly uniting Douglas fir veneers, plastic glues and a fibrous plastic film, is a large-size structural product which needs no surface protection, no decorative treatment, no structural support.

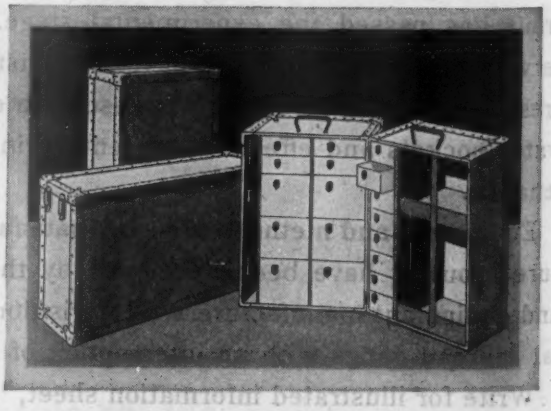
INDERON is stable. It does not warp or twist. It combines beauty, strength, durability and the economical panel form of standard plywood.

What Are the Uses of Inderon?

INDERON has literally thousands of applications in such fields as: Marine, Aviation, Railroad, Bus and Truck, Home, Office, Apartment, Farm and General Industry. Available now only for Army-Navy use. INDERON will become one of the most useful of all structural products in the post-war era. Write NOW for full information!



INDERON introduces a new formulation in the field of laminated plastics. To the hardness and the inert quality of the plastics is added an internal structure of resin-bonded veneer which adds strength and depth to the surface. This quality makes INDERON ideal for freight car siding, car roofs ,trailer linings, shipping containers, coach floors—and for station fixtures, signs, etc. Investigate INDERON —now.



INDERON is successfully serving the Army Air Corps as the preferred material for packaging many vital parts, medical supplies and delicate instruments. INDERON has also been used for many other important war purposes and has proved its ability to resist tropical fungus, termites, weathering and water immersion.

Manufacturers

Buffelen Lumber & Mfg. Co.
Tacoma 1, Washington

Washington Veneer Co.
Olympia, Washington

For Information, write
Chicago Sales Office
9 So. Clinton St., Chicago 6, Ill.

DIXIE CUPS"



"REMEMBER the old tin drinking cup on the train? I do. But how times change! For years now, along with everything else railroads have done for the safety and comfort of passengers, we've given 'em individual paper cups . . . Protection from contagion is as important as protection from accidents."

★ In connection with your post-war planning, Dixie Cup Company invites the inquiry of railway car designers relative to our latest developments in cup dispensing equipment, cups and containers—for water service, lunch bar and club car service. We will welcome discussion of adaption or creation of equipment to fit in with your design requirements. Address Railway Division, Dixie Cup Company, Easton, Pa.

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Superior 3-WAY FLUE ROLLER



Prevents Flues From Becoming Distorted

Eliminates Fire Cracking in the Firebox End

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Available for Immediate Shipment in sizes 3″ to 6″

Saves 80 per cent in Time and Labor

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The N. P. End Door Operator is a combined
- DOOR OPENER
- DOOR CLOSER
- DOOR CHECK

Here's progress—

your passengers will *really* appreciate

The N.P. End Door Operator will effortlessly and quickly open the end doors of your cars, allowing passengers to pass through the doorway without struggling with the door. To open a door equipped with this device, the passenger merely releases the door latch, when the End Door Operator instantly and effortlessly opens the door, and positively closes it behind him.

Air operated, safe, easy to install and maintain, the N.P. End Door Operator is an advance in end door operation, comparable to the air brake in braking. Your passengers will really appreciate the effortless convenience of this device.

Complete details will be furnished upon request.

NATIONAL PNEUMATIC COMPANY

GRAYBAR BLDG., NEW YORK
MITTEN BLDG., PHILADELPHIA
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Door Control **PLUS** *Dependable Service*

NP



They shall not be forgotten

WHEN the tumult and the shouting dies . . .

When it's all over over there in Europe and our boys and girls start coming home . . .

Shall we forget their courage and devotion, the sacrifice of the best years of their lives, the dangers they faced unflinchingly for us?

It is inconceivable.

No, *they* shall not be forgotten.

★ ★ ★

Nor in the days ahead, when an indomitable people turns to the "beating of swords into ploughshares," shall be forgotten Labor's stalwart stand and contribution to Victory . . .

Nor Management's, so largely responsible for the awesome miracle of production which electrified free men everywhere and saw democracy's forces the best equipped, best clothed, best fed the world has ever known . . .

Nor the "little people" of the nation who, quietly on the home front, served in their myriad ways . . . Neither shall these be forgotten.

★ ★ ★

And while saluting those who made more conspicuous contributions, let us also give recognition to those manufacturers and service organizations who, in the face of difficulties that seemed insurmountable, served so valiantly to keep our vital domestic economy moving.

When the going was hardest, when everyone was clamoring for goods and services of which there were not enough to go around, they did their best . . . they came through!

These too shall be gratefully remembered in postwar years.

Though war's imperious demands have preempted a large part of our production capacity, we know that the Nation's Railroads—themselves doing a magnificent job under unprecedented difficulties—recognize the part that Rosemary Napery has played in maintaining their dining service standards.

In peace as in war, Rosemary offers a dependable source for your particular requirements . . . with permanently finished, lintless TABLECRAFT* *(Rosemary-Basco) Cloths and Napkins . . . "Made right, in America!"*

*Reg. U. S. Pat. Off.

ROSEMARY SALES

A Division of Simmons Company

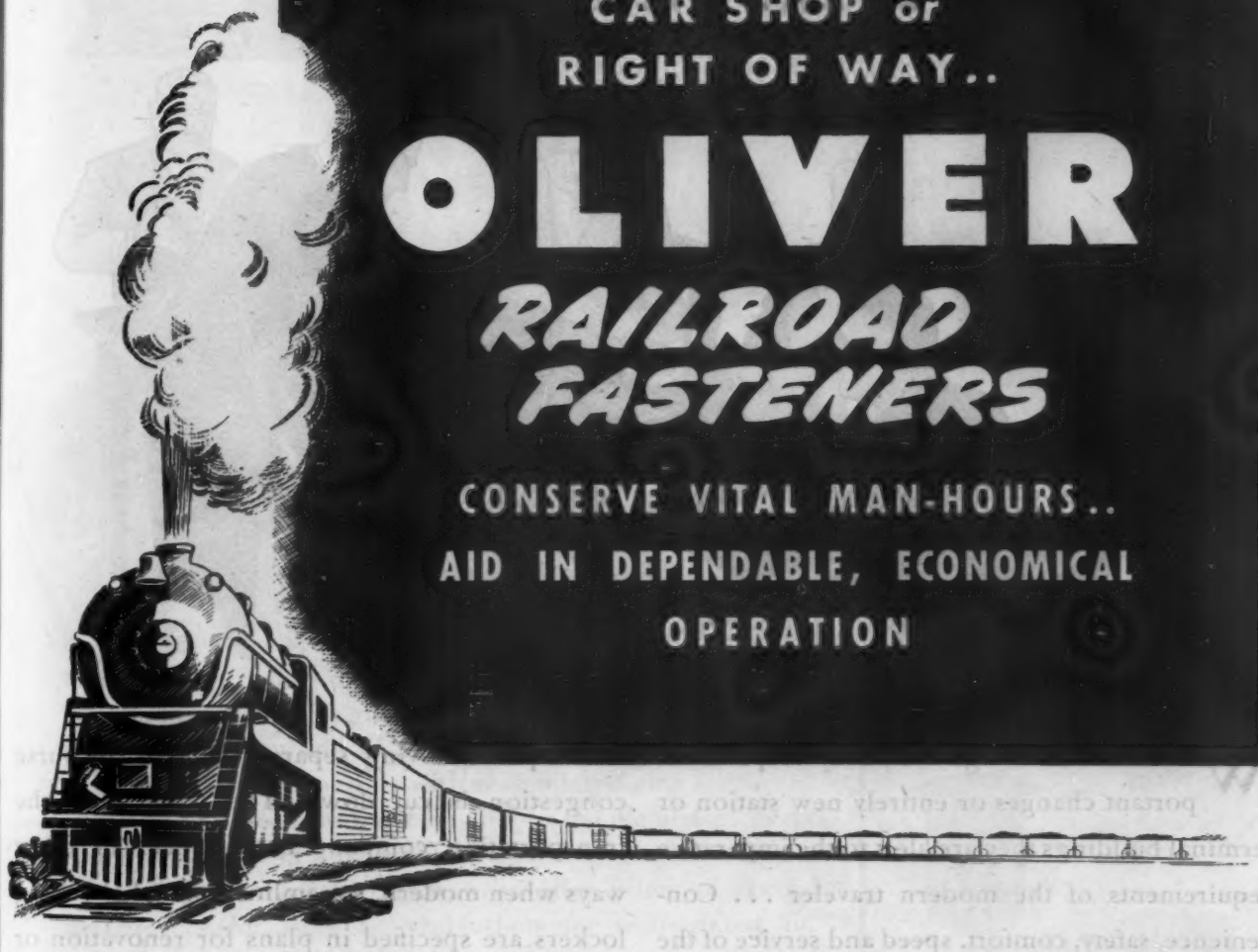
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CAR SHOP or
RIGHT OF WAY..

OLIVER

RAILROAD FASTENERS

CONSERVE VITAL MAN-HOURS..
AID IN DEPENDABLE, ECONOMICAL
OPERATION



The high quality, uniformity and dependability of Oliver bolts, nuts and rivets mean faster assembly, better joints. In building or repairing cars, in locomotive work, in track work and structures, work goes faster when you use accurately made, close-fitting Oliver fasteners.

Years of experience and modern equipment enable us to produce, in quantity, the types of fasteners needed for railroad service.



Write for the Oliver Railroad Catalog No. 4. Lists bolts, nuts, rivets, gage rods and other accessories.

OLIVER
IRON AND STEEL
Corporation

SOUTH TENTH & MURIEL STREETS · PITTSBURGH 3, PA.

"....AND BE SURE TO PUT PARCEL LOCKERS HERE, TOO!"



WHEREVER men gather today to plan important changes or entirely new station or terminal buildings they are alert to the imperative requirements of the modern traveler . . . Convenience, safety, comfort, speed and service of the ultra-modern kind. . . . A whole new generation of travelers has come into the scene in the past few years . . . multiplied many fold during the war. Today's travelers are definitely travel-wise.

LOCKERS ESSENTIAL

Today travelers look *first* for lockers. They regard lockers as *essential* to their convenience, to the safety of their luggage, to the speed with which they can make connections. With parcel lockers at their service they avoid waiting in line...

Locker location has become an almost exact science. Lockers properly located divert traffic in to quick moving separate lanes. Concourse congestion is cut down. The public and the transportation company both benefit in many ways when modern, streamlined parcel checking lockers are specified in plans for renovation or new building.



A Nation-Wide Service

Our consultants will gladly confer with you on the problems of locker location and installation, and will make surveys and recommendations without obligation

AMERICAN LOCKER COMPANY, Inc.

211 CONGRESS ST., BOSTON 10, MASS.

BOSTON NEW YORK PHILADELPHIA PITTSBURGH
ATLANTA CLEVELAND CHICAGO DALLAS LOS ANGELES

TOMORROW'S BLUEPRINTS WILL ALL INCLUDE PARCEL LOCKERS



WHY YOU CAN'T SEE THE AIR

in the dining car . . .

Conditioning the air in modern railroad cars is a tough job. It calls for first rate engineering of heating, cooling, humidifying and particularly of air cleaning devices for use with fresh air intakes as well as with recirculated air.

Filters in these cars must be able to handle almost every conceivable type of dust, lint and dirt. A large percentage of these are made by Air-Maze, who offer filters of special design—one for fresh air and others for recirculated air.

Preference for Air-Maze filters, not only in railroading but in dozens of other fields, is due to the fact that Air-Maze engineers co-operate closely with others who make control of air an exact science. Knowing the problems, and with the experience of nearly 20 years to draw upon, they have been able, time and time again, to solve the most difficult filtration problems.

Wherever clean air can remove a nuisance of health hazard or improve the quality of your product or service, consult Air-Maze *first.*

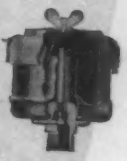
Air-Maze Filters *Fit* The Job

Typical ventilating panel filter.





Engine intake air filter. Oil bath type.



Oil bath breather filter for tanks, presses, etc.



Oil-wetted type breather filter.

These are but a few of the hundreds of specialized filters developed by Air-Maze. Send for catalog AGC-144.

AIR-MAZE CORPORATION • *Engineers and Manufacturers* • **CLEVELAND 5, OHIO**

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ARMY E NAVY

AIR-MAZE

SPECIALISTS IN AIR FILTRATION

In Postwar Transportation:

THE SHORTEST DISTANCE BETWEEN TWO POINTS WILL BE AN ENJOYABLE TRIP!



ENJOYMENT of travel and *not* super-speed will be the most important single factor in gaining postwar passenger revenue. Luminator's Advanced Lighting Systems add to passenger comfort and enjoyment because they permit passengers to read while riding and relaxing. Too, Luminator Lighting creates cheerful interiors, free from dazzle and glare. Luminator Lighting Systems are designed to blend harmoniously with car interiors, increasing their attractiveness and helping to build passenger good will.

Luminator is making a continuous study of Railroading's postwar lighting problems. A trained staff of engineers, designers and laboratory specialists are developing methods on full scale models that provide better seeing conditions and involve skillful modern design as well.

Increased revenue and *passenger appreciation* will be synonomous terms in postwar railroading.

Come in and visit the Luminator Lighting demonstrations in full-size car interior models.

LIGHTING ENGINEERS • DESIGNERS • MANUFACTURERS

LUMINATOR inc.

120 NORTH PEORIA ST., CHICAGO, ILLINOIS

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Planning Your Moves . . .

FOR TOMORROW'S RAIL TRANSPORTATION DEVELOPMENTS

VANADIUM STEELS AND IRONS



Railroad motive power, rolling stock and equipment have "accomplished the impossible" throughout the war. The foresight of management, engineering and mechanical staffs and their years of experience, have increased the use of Vanadium steels and irons.

Safe, efficient and economical performance is assured because of the higher strength-to-weight ratios, mechanical properties and fabrication qualities of Vanadium steels and irons. Chrome-Vanadium and Silicon-Vanadium Forging Steels... Carbon-Vanadium, Manganese-Vanadium and Nickel-Vanadium Steel Castings . . . Vanadium Cast Irons . . . and others . . . fully justify modern alloy techniques for modern rail developments.

Designers and builders of tomorrow's cars, locomotives and equipment will use time-proven Vanadium steels and irons to help achieve desired goals requiring structural improvement, easier riding, lower dynamic augment, reduced sections, increased payloads, reduced deadweight and lower maintenance costs.

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FERRO ALLOYS AND METALS

VANADIUM CORPORATION OF AMERICA,
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VANADIUM • CHROMIUM • SILICON • TITANIUM • GRAINAL ALLOYS • V-FOUNDRY ALLOYS • SPECIAL ALLOYS • GRAPHIDOX • ALSIFER



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ROLLING on Fafnir Ball and Roller Journal Bearings over the heavily traveled, high speed, steel highway between New York and Philadelphia, the Reading "Crusader" has turned in a record of four runs a day, six days a week, every week for over six years. Budd-built, every unit of the stainless steel train has rolled up a perfect record.

If you're interested in journal bearing performance records, keep the following Fafnir facts in mind when making your plans for new equipment. For heavy loads and fast hauls, for safe transportation and higher profits, for long wear and minimum maintenance, Fafnir Ball and Roller Journal Bearings are setting remarkable records.

ROLLER BEARINGS FOR RADIAL LOAD • BALL BEARINGS FOR THRUST LOAD • POSITIVE LUBRICATION AT ALL SPEEDS • EFFECTIVE SEAL AGAINST WATER AND DIRT • TYPES FOR OIL OR GREASE LUBRICATION • ADAPTABLE TO STANDARD AAR PEDESTAL OPENINGS • NEED NO REMOVAL AT WHEEL TURNING PERIODS • REDUCE STARTING LOADS UP TO 90% • CUT MAINTENANCE COSTS TWO-THIRDS

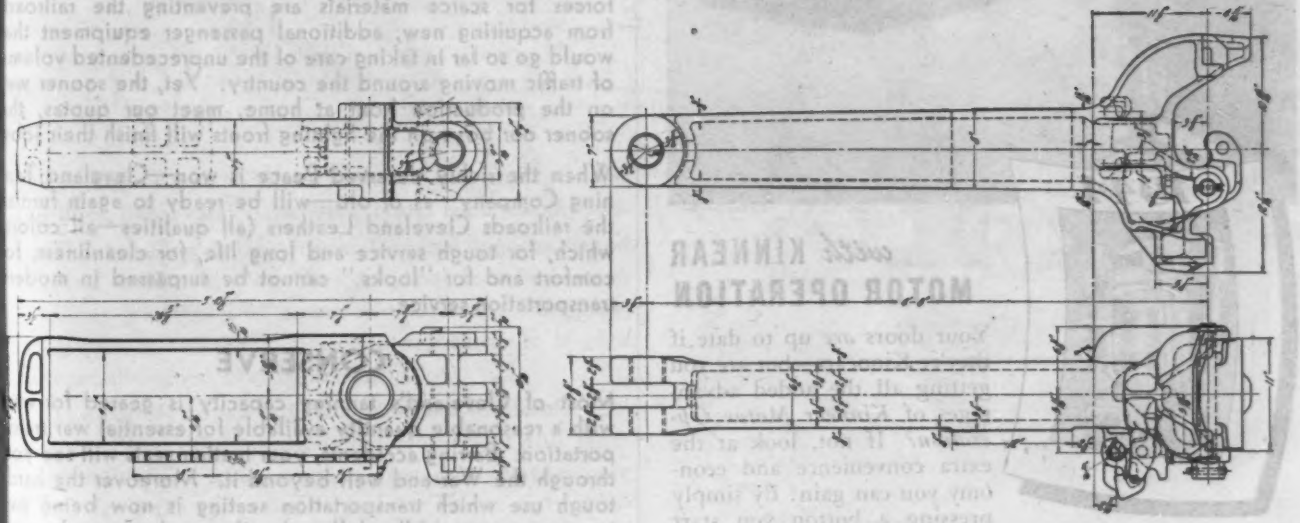
BUY MORE WAR BONDS AND STAMPS

THE **FAFNIR BEARING CO.** NEW BRITAIN CONNECTICUT

McCONWAY & TORLEY CORPORATION

COUPLERS AND ATTACHMENTS





A. A. R. TIGHTLOCK COUPLER AND YOKE
FOR MODERN PASSENGER TRAIN SERVICE

GENERAL OFFICES AND WORKS **PITTSBURGH, PA.**

SALES OFFICES: Baltimore · Chicago · St. Louis · San Francisco

Have YOUR DOORS been *brought up to date?*





with KINNEAR MOTOR OPERATION

Your doors *are* up to date if they're Kinnears—but are you getting all the added advantages of *Kinnear Motor Operation?* If not, look at the extra convenience and economy you can gain! By simply pressing a button you start these motorized doors up or down *instantly!* This quick, easy door control saves time and labor. Operation becomes so simple doors are not neglected—heating and air conditioning costs are greatly reduced. Motor operation also means *smoother* operation; doors are stopped automatically at top and bottom of the opening without slamming or rebound, reducing possibility of damage. And motor operation permits remote control; doors may be controlled from several advantageous points, and any number of doors may be controlled from a single point! Write today for further details on Kinnear Motor-Operated Rolling Doors! The Kinnear Mfg. Co., 2020-40 Fields Avenue, Columbus 16, Ohio.

Offices and Agents in all Principal Cities

KINNEAR
ROLLING DOORS



AN IMPORTANT MAINTENANCE SUGGESTION

We are happy to remind our railroad friends that Leather, "tanned the Cleveland way," is now available for upholstering, strap leathers, gimps and bindings—on maintenance and repair jobs only.

It is unfortunate that the pressing demands of our armed forces for scarce materials are preventing the railroads from acquiring new, additional passenger equipment that would go so far in taking care of the unprecedented volume of traffic moving around the country. Yet, the sooner we, on the production front at home, meet our quotas, the sooner our boys on the fighting fronts will finish their jobs.

When the richly deserved Peace is won—Cleveland Tanning Company—as of old—will be ready to again furnish the railroads Cleveland Leathers (all qualities—all colors) which, for tough service and long life, for cleanliness, for comfort and for "looks," cannot be surpassed in modern transportation service.

CONSERVE

Most of Cleveland's tanning capacity is geared for war, with a reasonable quantity available for essential war transportation. Barring accidents, your leather seats will see you through the War and well beyond it. Moreover the hard, tough use which transportation seating is now being put to, may more rapidly dull and soil your leather. In such cases, leather can be preserved and made as good as new through a simple and quick process of rejuvenation.

CLEVELAND'S LEATHER LIFE EXTENSION SERVICE

is available to all railroads for the asking. Write for complete data now and keep your leather in trim for war as well as after war service.

BACK THE ATTACK—BUY WAR BONDS

CLEVELAND TANNING CO.
CLEVELAND 9, OHIO

Transportation Sales Representative,
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A Modern Air Terminal uses Oildraulic Elevators



Reproduced by Permission of Popular Science Magazine

New York City's Airlines Terminal serves five major air lines. Buses carry passengers to and from the airports.

This 5 million dollar Airlines Terminal opposite Grand Central Station in New York City has four basements, facilities for 60 offices, a conveying system for baggage, escalators, a cocktail lounge, and a theatre. It is of a unique all-welded steel construction.

The battery of six especially designed Oildraulic Elevators is one of the outstanding features of this landmark in U. S. air transportation. They raise the passenger buses from the sub-cellar to the 41st Street exit, a distance of 40 ft. The 30 ft. long cars operate at a speed of 65 ft. per minute, yet even when loaded to their maximum capacity of 12,000 lbs. automatic two-way floor leveling assures extremely accurate landing stops.

If your elevator requirements are unusual may we suggest an interview with one of our field offices? If you need only a good dependable elevator that costs very little to maintain, your best bet is to specify a "Rotary Oildraulic."

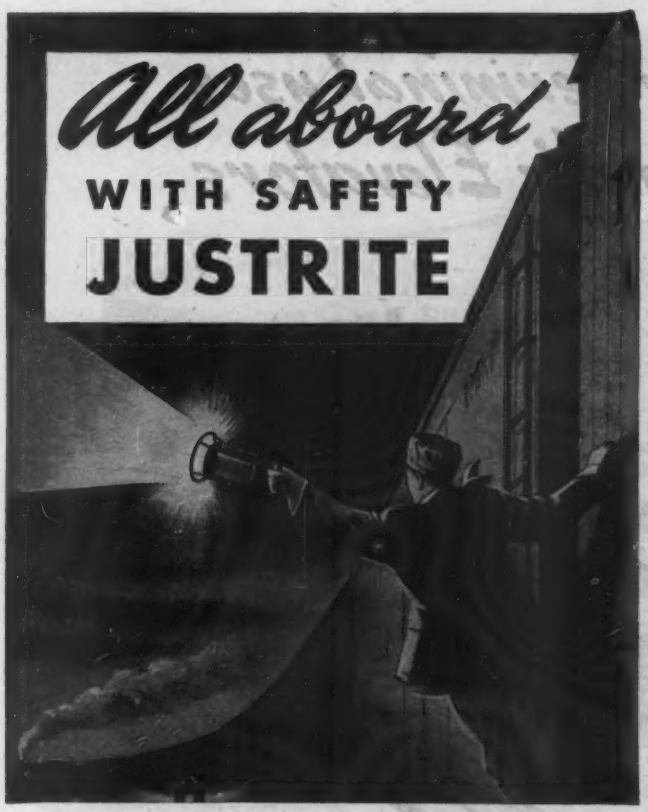
Battery of 6
special elevators in daily service

ROTARY LIFT COMPANY

REPRESENTATIVES IN ALL KEY CITIES, CANADA AND MEXICO

MEMPHIS, 1038 KANSAS TENNESSEE

All aboard WITH SAFETY JUSTRITE



Along the right-of-way portable lights pierce the darkness . . . aiding trainmen to carry on their multiple duties. Many of these lights are Justrite Twin-Bulb Lanterns and Justrite Service Flashlights . . . the safety lights that are always there when and where they're needed.

THE NEW JUSTRITE SERVICE FLASHLIGHT—No. 17-S



For jobs requiring an approved safety light, this is the latest Justrite handy flashlight. Husky, powerful . . . 1500 candlepower . . . 3 standard cells for dependable service. Fits in the palm of your hand, on belt clip, or stands alone on its own base. Plastic case with all Justrite safety features "sealed-in."



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Now is the time to bring your shop washing facilities up to date. Many railroads are doing this now by installing Bradley Washfountains,—installations by 13 railroads being made during the last 90 days.

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Brooklyn-Manhattan Transit Company
Canadian National Railway
Chesapeake & Ohio Railroad Co.
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Chicago, Milwaukee, St. Paul & Pacific RR.
Delaware, Lackawanna & Western Railroad Co.
Denver & Rio Grande Western Railroad
Illinois Central Railroad
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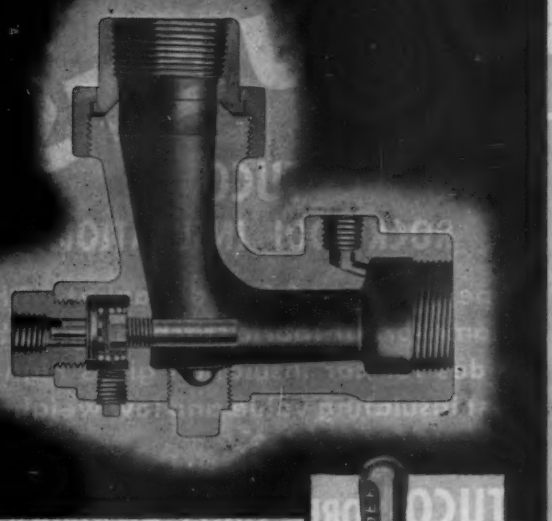
A Bradley serves clean running water to each of a group.

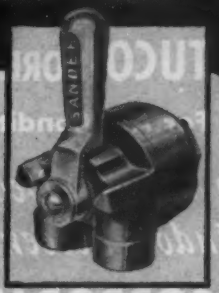
To Whom Shall We Send Catalog 4308

Floor plan suggestions and detail information are included in our latest Catalog 4308. To whom shall we send a copy? BRADLEY WASHFOUNTAIN CO., 2327 W. Michigan St., Milwaukee 1, Wis.

BRADLEY *Washfountains*







Viloco SANDERS

For Diesel and Electric Locomotives

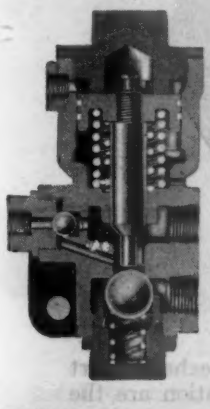
The Viloco Sander equipment for Diesel and Electric Locomotives is especially designed for this type of service. It is economical in the use of sand and air; reliable and efficient under all weather conditions.

Viloco Sander Trap Type GB-342

The Type GB-342 is made with a horizontal discharge as illustrated above, and is provided with a clean-out nozzle. The sander nozzle which controls delivery of sand is fixed and cannot be altered promiscuously. Any alteration in delivery requirements is simplified by applying a longer or shorter nozzle. A check valve with composition gasket prevents back pressure from blowing sand into the air line. If the installation requires angle discharge the Type GA-343 trap should be specified.

Viloco Sander Valve No. 350

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Viloco Relay Valve No. 341

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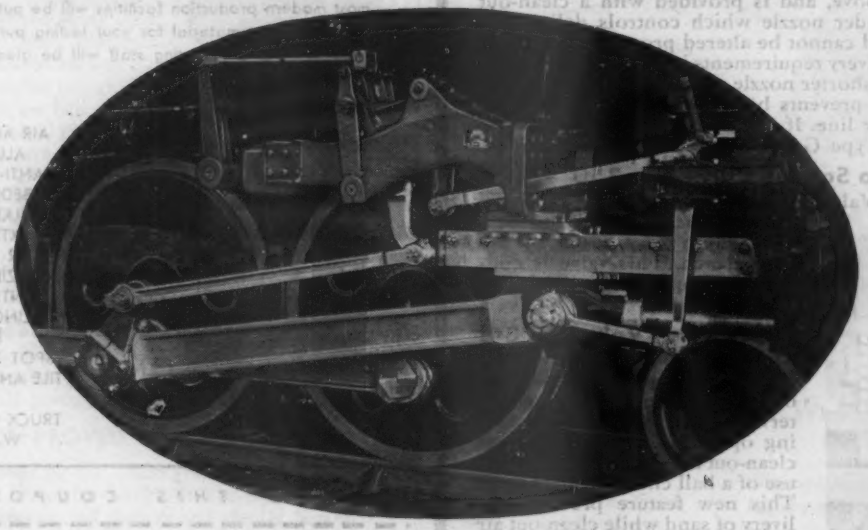
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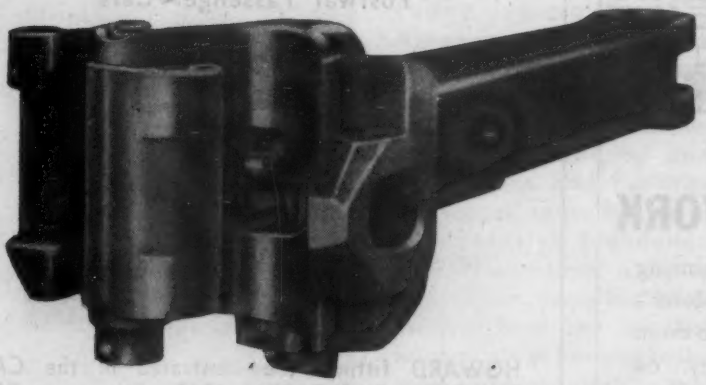
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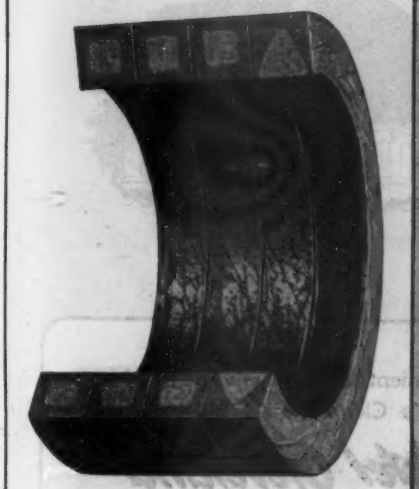
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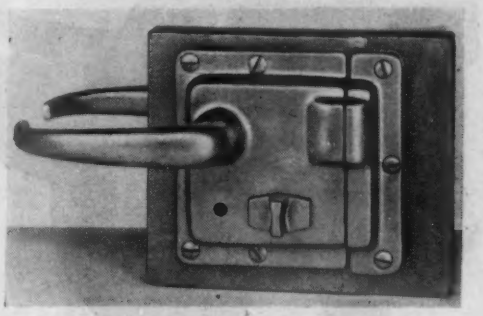
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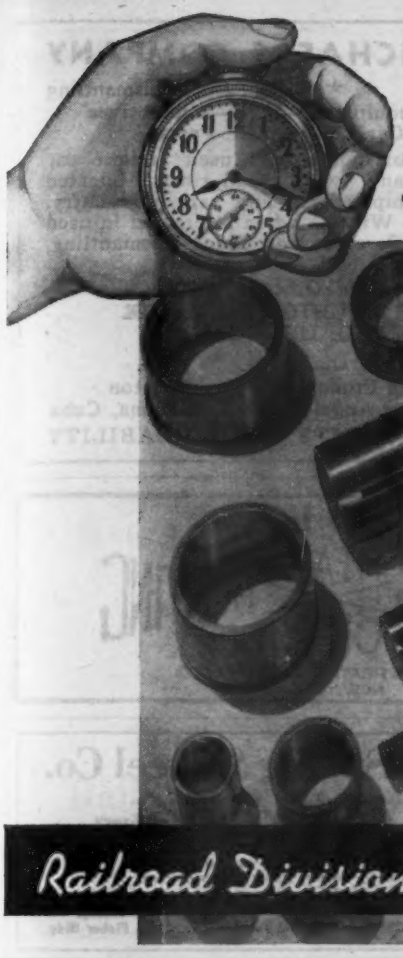


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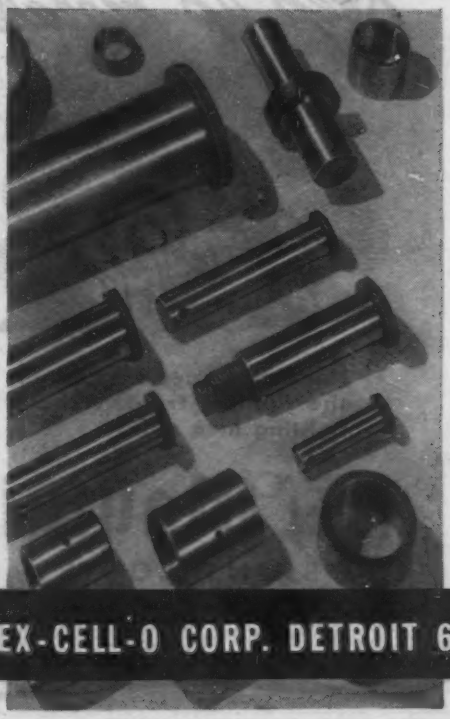
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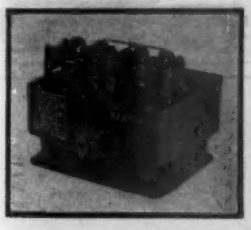
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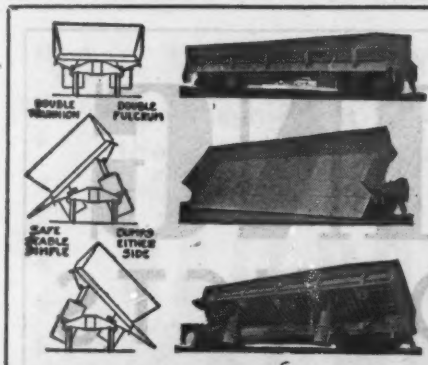
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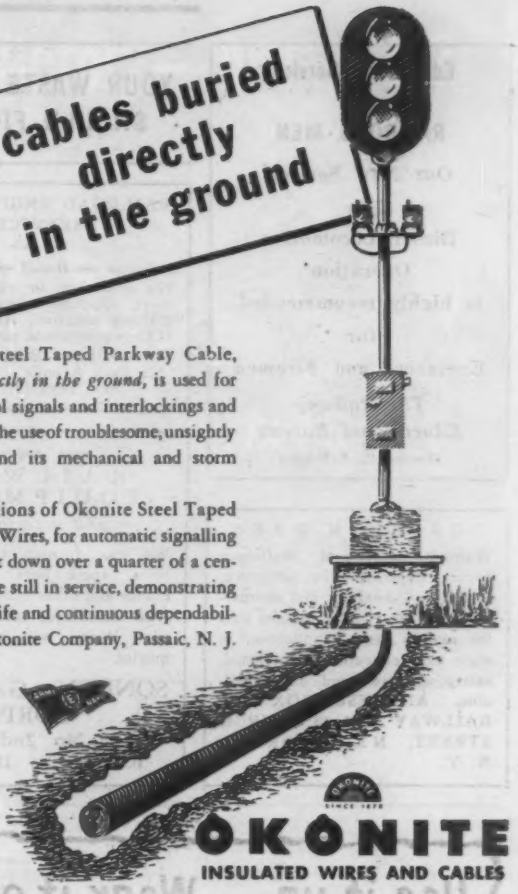
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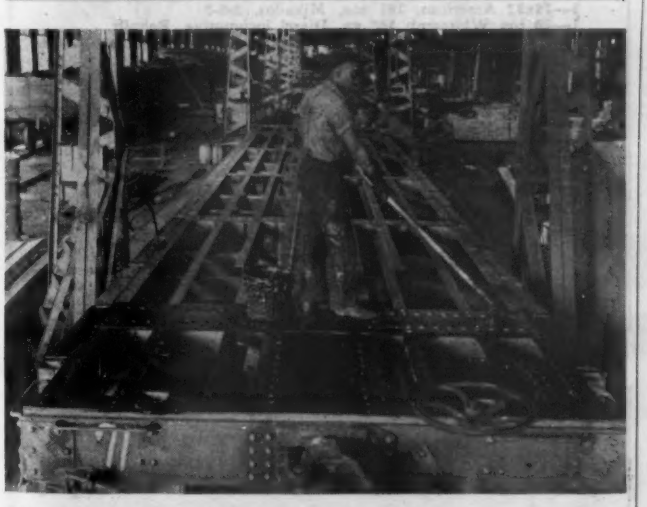
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They're Going Overboard For Victory—Are YOU?



USE 8-POINT PLAN FOR AN OVERBOARD DRIVE IN THE 6th WAR LOAN!

NOV. 20th TO DEC. 16th

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- Start the ball rolling by appointing a **6th War Loan Bond Committee**, representing labor, management and other groups.
- Carry on by selecting a **Team Captain**—preferably a returned veteran—for every 10 workers.
- Right at the start, establish a **Quota** for each department—and every employee.
- Arrange frequent **Meetings of Captains**, highlighting importance of their work—effective sales methods—and need for painstaking study of Treasury Booklet, Getting The Order.



- Make definite **Assignments** to those best equipped to arrange music, speeches, rallies, competitive progress boards and meeting schedules.
- Issue **Individual Pledge Cards**—made out in the name of each worker and providing for both cash and installment purchase.
- **Resolicit!** This is the secret of "overboard" War Bond subscriptions. Your State Payroll Chairman has a special Resolicitation Plan for you to put into action near the end of the campaign.
- Give generously of your **Advertising Space** to drive home the War Bond story.

The Treasury Department acknowledges with appreciation the publication of this message by

RAILWAY AGE

★ *This is an official U. S. Treasury advertisement—prepared under auspices of Treasury Department and War Advertising Council* ★

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keeps passenger trains moving in war-time

ANALYSIS of train operation on lines which are handling heavy war-time traffic develops certain conclusions concerning the benefits of modern signaling systems in the operation of passenger trains in war that will apply also in the post-war period. A primary objective from the passengers' point of view is to provide safety of travel and on-time arrival at destination; he also desires to avoid unnecessary train stops and starts. Modern signaling is an important aid in providing acceptable passenger service on multiple-track lines, but in this war it has been applied most extensively and has been of greatest benefit on single-track lines.

As Applied on Single-Track

Soon after the United States entered this war unusually large volumes of passenger as well as freight traffic were thrown on many railroad lines. Serious delays were most acute on certain lines through the south and southwest which include extended sections of single-track on important through routes. Trains loaded with munitions and troops were given preference. As a result, scheduled passenger trains were held on sidings to such an extent that they arrived at the terminals hours late.

Study showed that the railroads faced the necessity of handling an ever-increasing volume of passenger business, and at the same time of keeping those passenger trains from interfering with the operation of trains handling munitions and other war materials, as well as important civilian foodstuffs.

Even if rails, ties and other materials had been available, second track could not have been planned and constructed in time to be of much benefit in winning this war. Furthermore, such additional track facilities might easily prove to be unnecessary after the war closes. The problem, therefore, was to devise some means to move more trains faster over the existing single-tracks.

On many divisions, the operating departments did the best they could with the existing [illegible] and train-order method of authority for movement, with scheduled trains [illegible] extra trains to [illegible] portion to the [illegible] trains. [illegible] dispatcher [illegible] train [illegible] must [illegible]

Railway Age - November 20, 1943

...asions dispatchers ... ...ving out on the line that ... ...to issue the necessary orders to ...ady to leave yards, even when track w... ...or them to depart.

Centralized Traffic Control

All these war-time troubles and train delays wit... timetable and train-order operation stood out in marked contrast with the results that were being obtained on territories which were equipped with centralized traffic control before the war, or on those sections which have been provided with such facilities since December 7, 1941.

Centralized traffic control is a system for authorizing train movements by the indications of signals at th... cations where action is to be taken, rather than ... use of timetables and train-orders. These signa... well as the power switch machines at crosso... ...ons and passing tracks, are controlled fr... ...point. Starting in 1927, the railroads h... ...tralized traffic control on 3,592 mile... ...v 1, 1943.

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